2007–08 Annual Report

Nuclear safety means...

protecting Canadians
independent decisions
international collaboration
greater transparency
a clear voice for Canadians
protecting the environment
well-managed growth
healthy communities
greater understanding
peace and cooperation

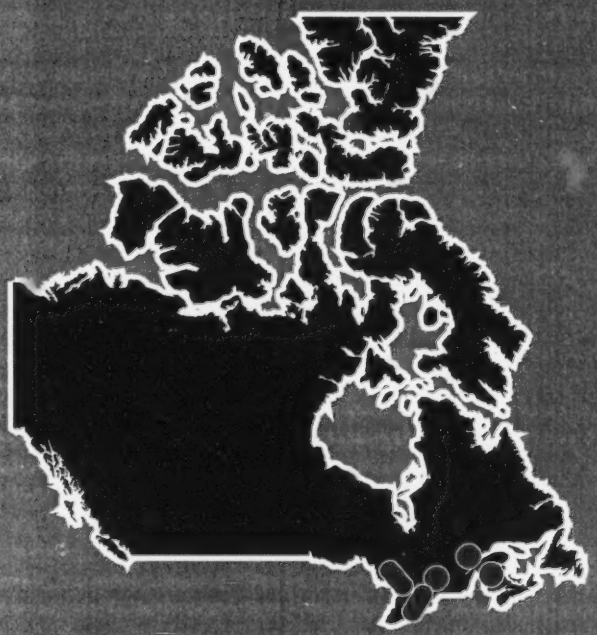
Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

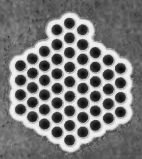
Canada

Did you know?

Canada has seven nuclear power plants:

- **Bruce Nuclear Generating Stations A and B**
  Bruce A has two operational reactors and two reactors undergoing refurbishment, while Bruce B has four operational reactors.
  Tiverton, Ontario
- **Pickering Nuclear Generating Stations A and B**
  Pickering A has two operational reactors and two reactors that are no longer operating, while Pickering B has four operational reactors.
  Pickering, Ontario
- **Darlington Nuclear Generating Station**
  Darlington has four operational reactors.
  Bowmanville, Ontario
- **Gentilly-2 Nuclear Generating Station**
  Gentilly-2 has one operational reactor.
  Bécancour, Québec
- **Point Lepreau Nuclear Generating Station**
  Point Lepreau has one reactor undergoing refurbishment.
  Point Lepreau, New Brunswick





The 2007 International Atomic Energy Agency projections indicate that nuclear electricity generation may grow by 15 to 45% by 2020 and by 25 to 95% by 2030. The number of nuclear power reactors is predicted to increase by up to 60% and associated fuel cycle facilities by up to 45% by 2030.

– Yury Sokolov
International Atomic Energy Agency
Deputy Director General,
Head of the Department of Nuclear Energy

Published by Authority of The Honourable Lisa Raitt, P.C., M.P.,
Minister of Natural Resources Canada

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The Canadian Nuclear Safety Commission (CNSC) is committed to independent regulation of Canada's nuclear sector, helping to ensure that Canadian nuclear facilities are among the safest and most secure in the world.

CNSC is meeting the challenge of the increasing demand for nuclear energy by ensuring that related growth is well managed and regulated. Through rigorous licensing and compliance processes, CNSC carries out its regulatory oversight responsibilities to assure that nuclear facilities throughout Canada are safe and secure and that the health of Canadians and the environment remain a top priority. CNSC also cooperates with domestic and international partners to promote Canada's full participation in establishing and maintaining best practices for the peaceful use of nuclear energy and materials.

CNSC pledges to Canadians that the country's nuclear regulatory processes will remain strong and effective and that their health, safety, security and the environment will be protected.

Letter to the Minister

The Honourable Lisa Raitt
Minister of Natural Resources Canada
Ottawa, Ontario

Madam:

I have the honour of presenting you with the Annual Report of the Canadian Nuclear Safety Commission for the fiscal year ending March 31, 2008. The report has been prepared and is submitted in accordance with Section 72 of the *Nuclear Safety and Control Act*.

M. Binder

Michael Binder
President and Chief Executive Officer
Canadian Nuclear Safety Commission

Message from the President

It is with great pleasure that I present the Canadian Nuclear Safety Commission (CNSC) 2007–08 annual report, my first since being appointed as the organization's President.

The year saw many significant accomplishments for CNSC. We set out to improve relationships with our stakeholders; streamlined and strengthened the regulatory framework; reallocated resources to address the growing interest in new nuclear power plants; established a working group to improve Aboriginal consultations; and laid new foundations for investing in employee development. These are just a few examples of the excellent work CNSC has undertaken over the past year to enhance the safety and security of Canadians and the environment.

The nuclear sector is forecasting significant growth in the coming years as a result of the continuing rise in global demand for energy and the need to reduce greenhouse gas emissions. Combined with the increasing use of nuclear technology in industry, research and medicine, this nuclear renaissance is bringing about a considerable increase in the need for regulatory oversight – especially in areas such as licensing for nuclear fuel mining and processing facilities.

The increase in Canadian energy requirements is occurring at a time when the country's fleet of existing nuclear power plants is aging. It is therefore not surprising that CNSC is receiving a significant number of plans to refurbish and extend the life of existing plants, and to build new nuclear power plants to meet energy demands. CNSC is refocusing its efforts to respond to these developments and the related growth in proposed plans for new uranium mining and processing.

On the international front, CNSC continues to actively participate in the activities of the International Atomic Energy Agency and the Nuclear Energy Agency. These fora provide opportunities to share best practices in nuclear safety and strengthen Canada's commitments to non-proliferation and the peaceful use of nuclear materials.

In late 2007, the extended shutdown of the National Research Universal (NRU) reactor in Chalk River resulted in concerns about the supply of isotopes that are used for medical diagnostics and treatments. As a result, the government has issued a new directive to CNSC to ensure that the health of Canadians is taken into account in CNSC licensing decisions. This incident has led CNSC and Atomic Energy of Canada Limited to jointly commission a review by an independent third party. The review identified a number of critical lessons and provided recommendations for improvement, which will be reviewed and implemented by CNSC.

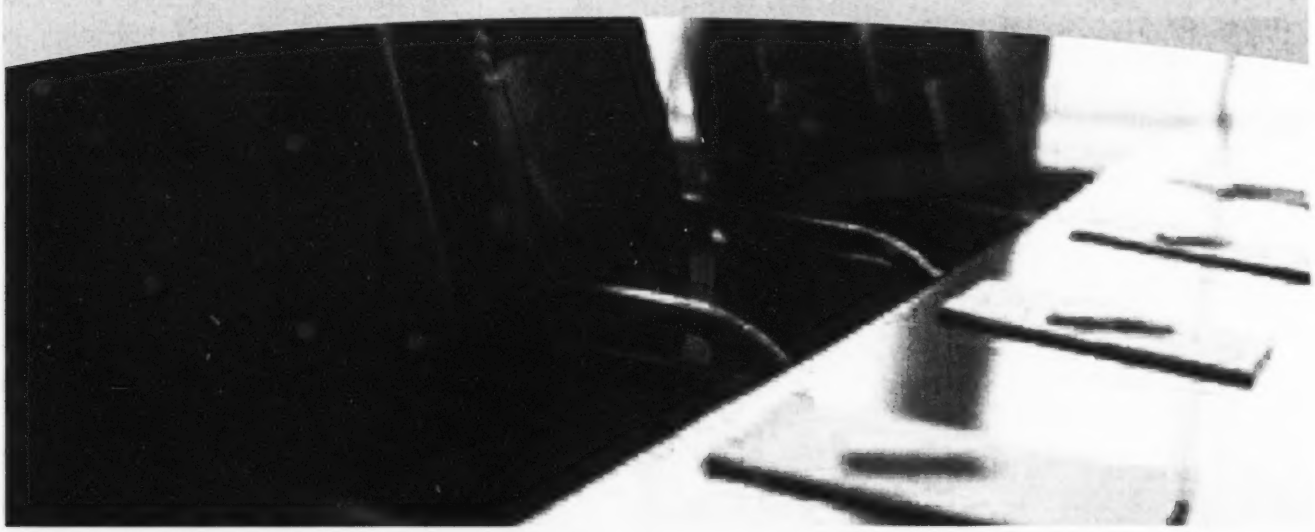
In the short time since my arrival, I have been impressed by the expertise and dedication of CNSC's workforce. Going forward, the recruitment and retention of skilled staff will remain an important priority for CNSC. We will be strengthening our staffing efforts in a highly competitive market to respond to industry growth needs.

In my role as CNSC's President and Chief Executive Officer, I am committed to assuring Canadians that the use of nuclear materials in nuclear facilities is safe and secure.

With respect,

M. Binder

Michael Binder



Commission Tribunal Members

Michael Binder
President and Chief Executive Officer,
Canadian Nuclear Safety Commission
Ottawa, Ontario
Named as a permanent Commission member on January 15, 2008

Dr. Christopher R. Barnes
Professor, School of Earth and Ocean Sciences,
University of Victoria
Victoria, British Columbia
Named as a permanent Commission member on January 23, 1996

Dr. Ronald J. Barriault
Physician, Restigouche Regional Health Authority
Charlo, New Brunswick
Named as a permanent Commission member on December 3, 2007

Dr. James A. Dosman
Director, Institute of Agricultural Rural
and Environmental Health, University of Saskatchewan
Saskatoon, Saskatchewan
Served as a permanent Commission member from May 30, 2002 to December 29, 2003 and from April 23, 2004 to April 22, 2007

Alan R. Graham
Rexton, New Brunswick
Named as a permanent Commission member on January 1, 1999

André Harvey
Québec, Québec
Named as a permanent Commission member on June 2, 2006

Linda J. Keen
Ottawa, Ontario
Named as a permanent Commission member on November 1, 2000

Dr. J. Moyra J. McDill
Professor, Department of Mechanical
and Aerospace Engineering, Carleton University
Ottawa, Ontario
Named as a permanent Commission member on May 30, 2002

Dr. Jean-Guy Paquet
Chairman, Board of the National Optics Institute
Québec, Québec
Served as a permanent Commission member from June 2, 2006 to April 30, 2007

Executive Management Team

Michael Binder
President and Chief Executive Officer
Named as President of CNSC on January 15, 2008

Ramzi Jammal
Executive Vice-President, Regulatory Operations and Chief Regulatory Operations Officer

Terry Jamieson
Vice-President, Technical Support

Patricia McDowell
Vice-President, Regulatory Affairs

Claude Caron
Vice-President, Corporate Services and Chief Financial Officer

Jacques Lavoie
Senior General Counsel and Director of Legal Services

Marc Leblanc
Commission Secretary

Overview and Priorities

CNSC regulates nuclear energy and substances in Canada. Through its licensing, certification and compliance processes, CNSC ensures that nuclear activities are carried out safely, in order to protect people, their health and their environment. CNSC also works to ensure that Canadians and Canadian companies respect Canada's international commitments on the peaceful use of nuclear energy.

CNSC was established in 2000 under the *Nuclear Safety and Control Act* (NSCA), and reports to Parliament through the Minister of Natural Resources. The agency was created as a successor to the former Atomic Energy Control Board, which was founded in 1946. CNSC's mandate, responsibilities and powers are set out in the NSCA and are elaborated in the *Canadian Nuclear Safety Commission Rules of Procedure* and the *Canadian Nuclear Safety Commission By-laws*. Through the NSCA, regulations, associated regulatory documents, licences and licence conditions, CNSC regulates the entire Canadian nuclear cycle and all aspects of nuclear safety.

CNSC regulates:

+ nuclear power plants
+ uranium mines and mills
+ uranium processing and fuel fabrication facilities
+ nuclear research and test facilities and non-power reactors
+ nuclear substance processing facilities
+ radioactive waste and waste management facilities
+ nuclear substances and equipment in hospitals and cancer treatment centres
+ heavy water production plants

The organization is also responsible for:

+ regulating the use of nuclear substances and radiation devices, the packaging and transport of nuclear substances, and the import and export of nuclear substances and equipment
+ certifying personnel who hold key safety-related jobs at nuclear facilities
+ ensuring security at licensed nuclear facilities

CNSC also has regulatory oversight under the *Nuclear Liability Act* (NLA) and the *Canadian Environmental Assessment Act* (CEAA).

CNSC has approximately 670 personnel and a Commission Tribunal.

The Commission Tribunal has up to seven permanent members appointed by the Governor in Council. The President of CNSC is a permanent full-time member, and other members may be appointed to serve full or part time. Commission Tribunal members are chosen based on their credentials and are independent of all political, governmental, special interest group or industry influences.

The Commission Tribunal sets regulatory policy direction for the Canadian nuclear sector, makes legally binding

regulations, and renders licensing decisions for nuclear facilities and uses. For licensing matters, the Commission Tribunal considers applicant proposals, recommendations of CNSC personnel, and stakeholder views before making its decisions. For major facilities, these licensing matters are considered through public hearings. To promote openness and transparency, the Commission Tribunal conducts business to the greatest extent possible in public hearings and meetings and, where feasible, in communities affected by the decision at hand. Proceedings are available live on the Internet and are archived on CNSC's Web site, providing access to people across the country and around the world.

Nuclear Sector Overview

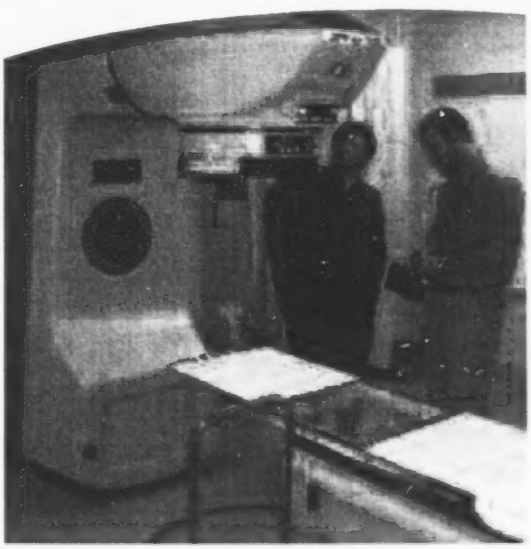
The Canadian nuclear sector is experiencing rapid expansion driven by three key global trends:

+ **Rising worldwide energy demand**
  Projections indicate that global energy demand will continue to grow, with forecasts of a 50-percent increase by 2030. Electricity generation is also projected to nearly double by then, with concentration on renewable and alternative energy sources. Canadian electricity demand is expected to rise 1.3 percent annually until 2020, leading to a need for sustainable, clean energy sources. By the year 2030, it is expected that 55 countries will operate more than 600 nuclear power plants. In turn, this will lead to greater global demand for uranium and a need for uranium mining and development. As the world's largest producer of uranium, Canada will be a key player in meeting the demand for nuclear energy[1].

+ **Increasing concern about climate change**
  At the same time, climate change is becoming an increasing concern and there is emerging international pressure for low-carbon economies and reduced greenhouse gas emissions. The Government of Canada has indicated that it will do its part by investing in electricity sources that include nuclear power.

+ **Growing use of nuclear substances in medical applications**
  There is a trend towards greater use of nuclear radioisotopes, particularly in medical imaging. Radioisotopes and radiation-emitting equipment are also required for cancer treatments, for which the need is increasing with Canada's aging population and an expected growth in cancer rates. Canada's number of Class II nuclear facilities, mainly cancer treatment centres, has doubled over the past five years. On December 10, 2007, the Government of Canada instituted a Directive to CNSC regarding the health of Canadians, as a complement to the NSCA, instructing the organization to take into account the health of Canadians in regulating the production, possession and use of nuclear substances.

These trends are all shaping an increased demand for nuclear energy and materials, and CNSC is responding to meet the challenges associated with regulating an expanding nuclear industry. As Canada's nuclear regulator, CNSC is committed to ensuring that nuclear activities are conducted safely and securely, and that the health of Canadians is protected.



[1] Sources: International Energy Agency, *World Energy Outlook 2006*; Energy Information Administration, *International Energy Outlook 2007*; Ux Consulting, *Nuclear Power Outlook*, October 2007.

Priorities

In positioning itself for today and for the future, CNSC has identified four key priorities. These priorities drive all CNSC activities, which are discussed in the "CNSC Activities" section of this annual report, and are underscored by the guiding principles of safety, simplification of processes, clarification of requirements and expectations, timeliness, and transparency.

+ **Manage growth of the regulatory program**
  CNSC is addressing the growing interest in building new nuclear power plants in Canada as existing nuclear reactors age. As part of its increased focus on new nuclear power plants, CNSC has begun modernizing its regulatory framework to bring it in line with current international standards and to apply these standards to projects for building new nuclear plants.

  CNSC is clarifying regulatory expectations, particularly for potential new nuclear power plants, by establishing clear licence requirements and creating guidelines to help licensees meet them. Key regulatory documents RD-337, *Design of New Nuclear Power Plants* and RD-346, *Site Evaluation for New Nuclear Power Plants*, were completed over the past year and will be presented for final Commission Tribunal approval in early 2008–09.

  CNSC has been working with the Government of Canada to secure additional long-term resources. In 2007–08, CNSC received approval to change the mechanism of funding cost-recoverable activities from the annual Parliamentary appropriation to a new revenue spending authority regime. This regime, to be implemented between 2008 and 2010, will enable CNSC to face current and future workload pressures associated with the growing number and needs of licensees.

  In the face of considerable nuclear sector expansion, CNSC requires sufficient staff to continue delivering its mandate. Through aggressive, innovative approaches to recruitment and retention, CNSC worked during 2007–08 to secure highly qualified employees in a competitive labour market.

+ **Deliver an effective regulatory program for existing facilities**
  CNSC is committed to assuring Canadians of the safety and security of current nuclear activities in Canada, and its day-to-day operations focus on delivering an effective regulatory program for existing facilities.

  In its sustained commitment to stringent oversight of existing facilities, CNSC reviewed applications to renew or amend existing licences, to verify that licensees would continue to operate safely and in accordance with regulations and licence conditions. Based on these reviews, the Commission Tribunal renewed and amended licences for existing facilities, which included nuclear power plants, uranium mines and waste management facilities.

  Through inspections, reviews, and assessments, CNSC staff concluded that the nuclear power industry operated safely during 2007. The evaluation of safety areas and programs, as presented in its annual *CNSC Staff Report on the Safety Performance of the Canadian Nuclear Power Industry*, showed that overall, licensees made adequate provision for the protection of the environment, health and safety of persons, and undertook all the measures required to implement Canada's international obligations. No worker at any nuclear power station or member of the public received a radiation dose in excess of regulatory limits, and emissions from all plants were well below regulatory limits. This finding was consistent with those of previous years.

+ **Implement improvement initiatives**
  Initiatives are underway to coordinate the Environmental Assessment (EA) process for new major projects. CNSC worked with the Canadian Environmental Assessment Agency to develop the framework for the conduct of joint review panels for major nuclear projects. A joint review panel integrates EAs and regulatory procedures into a single, concurrent process. The panel is established as a single body to make appropriate decisions at different stages for the EA and first licence application for a project while offering significant opportunities

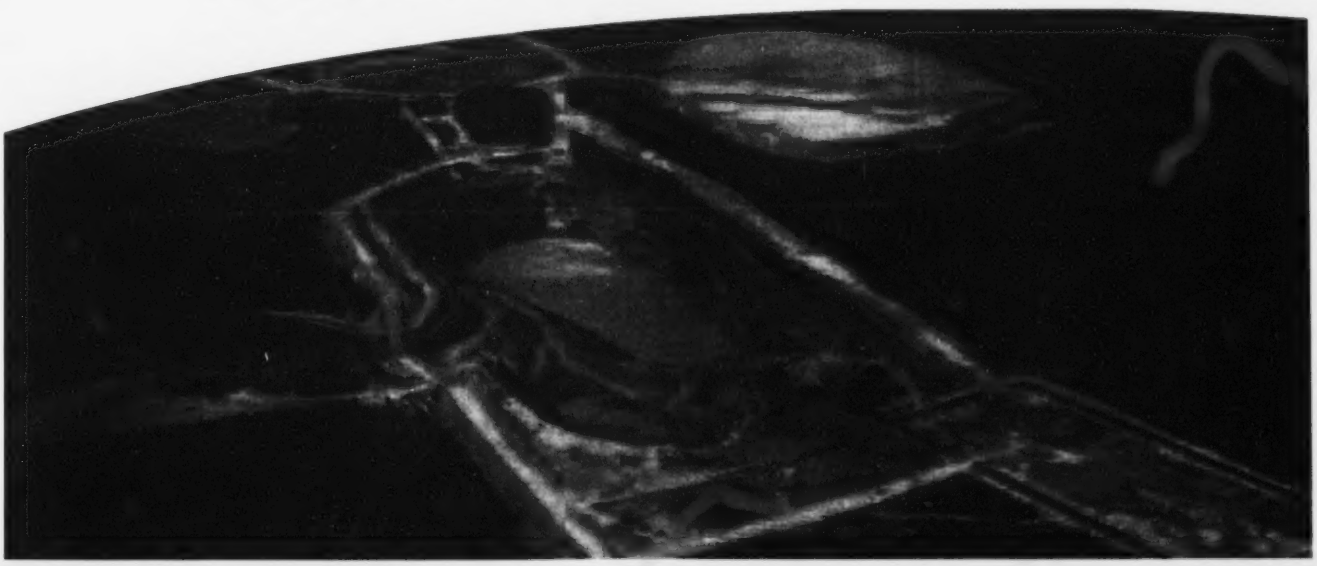
for public participation and exchange of views. In early Spring 2008, consultations will be launched for the proposed joint review panel agreements and environmental impact statement guidelines concerning the proposed Bruce Power New Build project and Ontario Power Generation Inc.'s Deep Geologic Repository.

To address industry growth in Canada, CNSC created the new Directorate of Regulatory Improvement and Major Projects Management. The directorate, which will be a single point of contact for all new build activities, consolidates the skills and expertise required to address major projects like new reactor design reviews and applications for new uranium mines and new power reactors.

The Major Projects Management Office (MPMO), established by the Government of Canada's Regulatory Improvement Initiative in late 2007, aims to improve regulatory co-ordination by providing licence applicants with a single, efficient point of entry into the federal regulatory process. The MPMO was established to enhance transparency, predictability, timeliness and accountability of the regulatory review and Aboriginal consultation processes for major natural resource projects, while maintaining existing regulatory responsibilities. CNSC is committed to working with the MPMO to share best practices and project plans for the regulation of major nuclear projects.

+ **Enhance external engagement and outreach**
CNSC is expanding its communications and outreach activities to fully engage Canadians, hear their concerns and respond to them. During 2007–08, CNSC visited and consulted with communities throughout Canada to share information and gather public input on EAs and licensing decisions, the performance of the nuclear power industry, and proposed changes to regulatory documents.

In line with its commitment to outreach, CNSC is improving accessibility to the public and licensees, with a special focus on Aboriginal consultations. CNSC is making greater use of the Web to inform all Canadians about the nuclear sector and nuclear safety, gather public feedback, respond to concerns, increase transparency, and offer online licensee services.



Nuclear safety means

balanced decisions

Many lessons were learned during 2007–08 when AECL's Chalk River NRU reactor was temporarily shut down to address safety issues. The situation triggered concern about domestic and worldwide supplies of radioisotopes – resulting in significantly increased public awareness of the importance of nuclear medicine and CNSC's role in making it safe.

Highlight: AECL Chalk River Laboratories National Research Universal Reactor

In November 2005, CNSC renewed the operating licence for the National Research Universal (NRU) reactor with a licence condition that seven safety upgrades would be fully operational by December 31, 2005. In July 2006, the NRU licence was renewed for a further 63 months.

In late 2007, there was a licensing concern related to the National Research Universal (NRU) reactor in Chalk River. Specifically, two of the main heavy water pumps were not connected to the hazards-qualified emergency power supply. At the time, the NRU reactor was shut down for routine maintenance. AECL subsequently informed CNSC that it would not restart the NRU reactor on November 22 as originally planned until the situation was corrected.

In early December 2007, AECL requested regulatory approval to operate the NRU for a limited period of time with only one of the two pumps connected to the emergency power supply. CNSC apprised AECL that a complete safety case and request for licence amendment were required before the matter could be referred to the Commission Tribunal for a decision. Subsequently, on December 10, the Ministers of Natural Resources Canada and Health Canada wrote to the Presidents of CNSC and AECL, urging them to work together to restart the reactor safely with due regard for those relying on the medical isotopes produced by the NRU. The Government of Canada also issued a Directive to CNSC on December 10, instructing it to take into account the health of Canadians who, for medical purposes, depended on nuclear substances from nuclear reactors. The reactor remained shut down.

On December 11 and 12, 2007, the House of Commons and Senate respectively passed a law that authorized AECL to operate the NRU reactor for 120 days with certain conditions. The reactor was restarted on December 16 and production of medical isotopes resumed within days.

On January 14, 2008, Ms. Linda J. Keen was removed from her position as CNSC's President by the Governor in Council. Mr. Michael Binder was appointed as the organization's President on January 15.

CNSC has initiated a review of lessons learned as part of its culture of continuous improvement. The review, conducted by an independent consulting firm, will provide a concise overview of key findings and recommended improvements that will prevent a repeat occurrence or similar situation.

The review team is examining the performance of CNSC over the period leading up to and pursuant to the Commission Tribunal decision to renew the NRU reactor operating licence, as well as the period leading up to AECL's decision to shut down the reactor. AECL is also conducting a lessons-learned review using the same independent consultants.

CNSC will respond to the consultants' report, recommendations and resulting action plans during the 2008-09 fiscal year, once it has received and reviewed the report.

Regulatory Framework

CNSC regulates the nuclear sector from "cradle to grave". In accordance with CNSC's mandate under the NSCA, nuclear safety, environmental protection, nuclear security and measures to ensure Canadians respect Canada's international obligations regarding the peaceful use of nuclear energy must be considered at all stages of a nuclear facility's lifecycle: site preparation; construction; operation; decommissioning; and, if appropriate, eventual abandonment and/or release of the site for other purposes. As a Responsible Authority for nuclear projects, CNSC also conducts EAs in accordance with the CEAA and any regulations under that Act.

A nuclear facility's lifecycle can vary widely, from one or two decades for a uranium mine or mill, to 60 to 100 years for a nuclear power plant, to centuries and more for nuclear waste facilities. Varying requirements for the siting, design, construction and operation of these different types of nuclear facilities pose different regulatory challenges.

The use of nuclear substances in industrial applications such as industrial radiography, medicine such as cancer treatment, and research such as materials science, is also constantly evolving, again posing new challenges to the nuclear regulatory regime.

As Canada's nuclear regulator, CNSC is committed to developing a strong, robust, modern and forward-looking regulatory framework that addresses the current and future regulatory challenges of the nuclear sector. CNSC's regulatory framework consists of regulations, licence conditions, regulatory documents, and domestic and international standards.

The various regulations under the NSCA set out regulatory requirements related to nuclear facilities and activities using nuclear substances that apply to all licensees or to classes of licensees or activities. Regulations are made in accordance with the *Statutory Instruments Act*, and the *Cabinet Directive on Streamlining Regulation*.

CNSC imposes licence conditions to ensure that licensees will address issues related to health and safety, the environment, or other aspects specific to their facilities or that are not addressed in regulations. Licence conditions are legally binding.

Regulatory documents provide guidance to licensees on CNSC's regulatory program and how to meet CNSC's regulatory expectations. Regulatory documents are not legally binding.

Finally, CNSC technical experts also participate in a number of domestic and international standard-setting initiatives, such as the development of nuclear standards by the Canadian Standards Association and the IAEA. Generally, these standards provide guidance on best practices; they can, however, become legally binding when incorporated into a regulation or licence.

2007–08 Regulatory Framework Activities

Enforcing compliance with regulations and licence conditions to ensure licensees are meeting regulatory obligations is a core CNSC responsibility. CNSC also ensures it has a modern, internationally benchmarked regulatory framework that addresses emerging risks, and that can respond to industry growth, whether

that growth be the refurbishment of existing reactors, the construction of new nuclear power plants, the increase in uranium mining and milling, or the expansion of nuclear medicine.

During 2007–08, CNSC made significant strides in these areas through the following initiatives:

CNSC streamlined and strengthened its regulatory framework

+ CNSC is responding strategically to the nuclear sector's rapid growth. In 2007, CNSC strengthened the roles and responsibilities of its Regulatory Policy Committee (RPC) to ensure that CNSC's regulatory framework can be better aligned with the organization's overall strategic direction and to developments in the nuclear sector. The RPC consists of senior CNSC executives, is chaired by the Commission Secretary and is supported by the RPC Working Group. In September 2007, the Commission Tribunal approved a revised regulatory framework, proposed by the RPC, for the development and approval of regulations and regulatory documents

+ CNSC is also responding to the renewed focus on regulation set out in the *Cabinet Directive on Streamlining Regulation* that came into effect on April 1, 2007. Among other policy objectives, this directive calls for expanded consultation with stakeholders on regulatory initiatives. In line with this requirement, CNSC took steps to enhance its existing stakeholder consultation efforts, by holding information sessions on key regulatory documents related to the siting and design of new nuclear power plants and by posting the public comments related to these documents on its Web site for further comment.

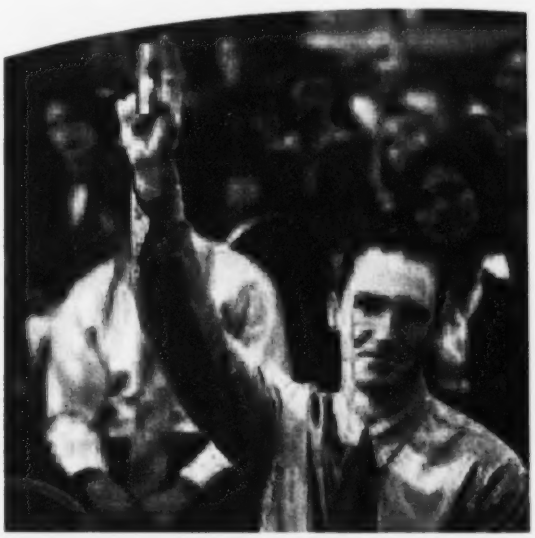
CNSC worked towards a modernized safeguards framework

+ CNSC continued to develop a national verification program that is aimed at controlling nuclear materials, ensuring their peaceful use and making certain that all are declared. The program will complement the IAEA's verification efforts, collectively referred to as "safeguards", which involve inspecting nuclear and related facilities to confirm that nuclear materials and activities are not used for military purposes.

+ 2007–08 saw significant advancement in the move to a new system for the IAEA's verification activities in Canada. This new system, which will shift from a facility-based approach to one that focuses on a State as a whole, is being implemented sector by sector. This evaluation process takes into account a given State's overall nuclear fuel cycle characteristics, including planned activities, and information from a variety of sources. Accomplishments in 2007–08 include implementation of a new way to handle the transfer of spent fuel at multi-unit reactor stations, and progress in the revision of safeguards verification processes at uranium processing facilities and nuclear power reactors.

CNSC amended regulations

+ ***Nuclear Substances and Radiation Devices Regulations* and *Class II Nuclear Facilities and Prescribed Equipment Regulations***
CNSC amended the *Nuclear Substances* and *Radiation Devices Regulations* and the *Class II*



Nuclear Facilities and Prescribed Equipment Regulations, with consequential amendments to the *General Nuclear Safety and Control Regulations* and the *Class I Nuclear Facilities Regulations*.

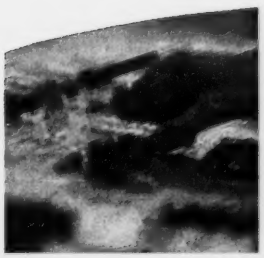
Amendments to these regulations correct regulatory deficiencies that came to light since they came into force in May 2000. The amendments also correct inconsistencies in order to better protect workers, the public and the environment, and they adopt the latest international standards for exemption values and clearance levels. The adoption of international standards in the regulations is in line with the principles outlined in the *Cabinet Directive on Streamlining Regulation*. The changes were registered and published in Part II of the *Canada Gazette* after fiscal year end.

Miscellaneous amendments to regulations

In 2007–08, two regulatory initiatives to make miscellaneous amendments to a number of regulations, to correct minor errors and address inconsistencies between the English and French versions of the regulations identified by the Standing Joint Committee on the Scrutiny of Regulations, were completed. The following regulations were amended:

- *General Nuclear Safety and Control Regulations*
- *Radiation Protection Regulations*
- *Class I Nuclear Facilities Regulations*
- *Uranium Mines and Mills Regulations*
- *Nuclear Non-Proliferation Import and Export Control Regulations*
- *Canadian Nuclear Safety Commission Rules of Procedure*
- *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*

These amendments came into effect in October 2007, with the exception of those to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*, which were registered and published in Part II of the *Canada Gazette* after fiscal year end.



CNSC continued to develop new regulations and amend existing regulations

- ***Nuclear Non-Proliferation Import and Export Control Regulations***
  These regulations are undergoing amendment to ensure that CNSC import and export control requirements for nuclear and nuclear-related dual-use items continue to meet international standards. Nuclear-related dual-use items are articles with legitimate non-nuclear uses that could also make a significant contribution to nuclear explosive devices or unsafeguarded nuclear fuel cycle activities. Publication in Part I of the *Canada Gazette* is planned for early 2009.

- ***Class II Nuclear Facilities and Prescribed Equipment Regulations***
  A proposed amendment will require the certification of radiation safety officers in Class II nuclear facilities. In line with the CNSC regulation-making process, CNSC sought initial comments for the proposed amendment. A formal consultation period is expected to follow.

- **New nuclear safeguards regulations**
  CNSC personnel continued developing nuclear safeguards regulations to clarify and consolidate measures by which licensees will meet the requirements of the NSCA and the *Safeguards Agreement and Additional Protocol* between Canada and the IAEA.

CNSC developed regulatory documents to clarify requirements

In response to the nuclear industry's plans to refurbish existing nuclear reactors and to build new nuclear power plants to meet energy demand, CNSC has devoted significant time and effort to clarifying the regulatory expectations related to nuclear power plants.

The following regulatory documents were approved by the Commission Tribunal and were published in 2007–08:

+ **RD-310, *Safety Analysis for Nuclear Power Plants***
  RD-310 helps ensure that during the construction, operation or decommissioning of a nuclear power plant, adequate safety analyses are completed by, or on behalf of, the applicant or licensee in accordance with the NSCA and regulatory requirements.
+ **RD-360, *Life Extension of Nuclear Power Plants***
  RD-360 informs licensees about the steps and phases to consider when undertaking a project to extend the life of a nuclear power plant.
+ **RD-204, *Certification of Persons Working at Nuclear Power Plants***
  RD-204 defines requirements to ensure that persons seeking certification or renewal of certification by CNSC for a position referred to in the licence of a nuclear power plant are qualified to carry out the duties of that position, in accordance with the NSCA and the regulations made under the NSCA.
+ **G-323, *Ensuring the Presence of Sufficient Qualified Staff at Class I Nuclear Facilities – Minimum Staff Complement***
  G-323 helps licensees and applicants for Class I nuclear facility licences demonstrate to CNSC that they will ensure the presence of a sufficient number of qualified workers to carry on the licensed activity safely and in accordance with the NSCA, regulations made under the NSCA, and their licences.
+ **S-210, *Maintenance Programs for Nuclear Power Plants***
  S-210 sets out CNSC expectations for maintenance program requirements that nuclear power plant licensees shall implement.

The following were approved by the Commission Tribunal for consultation:

+ **RD-337, *Design of New Nuclear Power Plants***
  RD-337 sets out CNSC's expectations regarding the design of new water-cooled nuclear power plants and is expected to be presented to the Commission Tribunal for final approval in the first quarter of 2008–09.
+ **RD-346, *Site Evaluation for New Nuclear Power Plants***
  RD-346 sets out CNSC's expectations for site evaluation for new nuclear power plants and is expected to be presented to the Commission Tribunal for final approval in the first quarter of 2008–09.

Given the importance of these two regulatory documents to industry and other stakeholders, the CNSC made considerable efforts to hear and consider input from industry and stakeholders. In addition to the normal

opportunity to comment offered to all Canadians, CNSC held an information session about RD-337 and RD-346 in Toronto in late November 2007, and also provided an opportunity to comment on feedback received. The CNSC will continue to ensure it considers the views of Canadians when developing its regulatory framework.

RD-337 and RD-346 will be presented to the Commission Tribunal in early 2008–09, for final approval and publication.

CNSC regulatory documents are available on CNSC's Web site at nuclearsafety.gc.ca

CNSC worked with partners on safety standards

+ CNSC collaborated with the IAEA on its safety standard *Radiation Protection Programmes for the Transport of Radioactive Material Safety Guide* (TS-G-1.3), published in November 2007.

+ CNSC also contributed to the development of the following Canadian Standards Association nuclear standards, which were published during 2007–08:

New standards:

- N290.14, *Qualification of Pre-Developed Software for Use in Safety-Related Instrumentation and Control Applications in Nuclear Power Plants*

- N291, *Requirements for Safety-Related Structures for CANDU Nuclear Power Plants*

- N292.3, *Management of Low- and Intermediate-Level Radioactive Waste*

New editions of standards:

- N287.2, *Material Requirements for Concrete Containment Structures for CANDU Nuclear Power Plants*

- N292.2, *Interim Dry Storage of Irradiated Fuel*

Licensing and Certification

CNSC is mandated under the NSCA to regulate nuclear facilities and nuclear-related activities in Canada. CNSC will only issue licences or certificates for nuclear-related activities to applicants who are qualified under the NSCA and who will make adequate provision for the protection of the environment, health and safety of persons, and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

During 2007–08, the Commission Tribunal held 43 hearings and 7 meetings. Key decisions for major nuclear facilities included the five-year renewal of the Darlington Nuclear Generating Station's power reactor operating licence. Demonstrating confidence that licensees are competently and adequately managing waste, the Commission Tribunal also approved the renewal of operating licences for the Western Waste Management Facility, Darlington Waste Management Facility and Pickering Waste Management Facility.

More than 90 percent of Commission Tribunal decisions during the year were issued within the published standard of 30 business days, with an average turnaround time of 16 business days, representing turnaround times that surpass best practices in the administrative tribunal community. A complete list of 2007–08 hearings is found on page 50, and documentation appears on CNSC's Web site at nuclearsafety.gc.ca

2007–08 Licensing Activities

CNSC oversaw Environmental Assessments

An EA is a planning tool that federal authorities use to help predict, evaluate, and mitigate the environmental effects of a proposed project under both normal and abnormal operating conditions. EAs examine many factors, including air and water quality, noise, human health, Aboriginal interest, physical and cultural heritage, and use of land and resources.

When CNSC receives an application to prepare a site and/or construct a new nuclear facility, an EA is triggered under the CEAA. A licence cannot be issued until an EA is complete.

There are two types of EAs at CNSC: screenings and comprehensive studies. A screening is usually conducted for projects that are unlikely to cause significant negative environmental effects, whereas a comprehensive study is usually conducted for large, complex projects that are likely to have significant negative environmental effects or draw public interest or concern. These projects are listed in the *Comprehensive Study List Regulations* under the CEAA. Screenings and comprehensive studies both have the potential to be referred to a review panel.

For major resource projects such as nuclear power plants, uranium mines or any potential projects involving future development of fuel processing facilities, the Government of Canada's new MPMO coordinates the work of all federal departments and agencies with a role in the regulatory process, including EAs for large and complex proposals and Aboriginal consultations to satisfy the Crown's duty to consult, if appropriate.

During 2007–08, 27 EAs remained active and two were completed. Eleven major EAs provided opportunities for extensive public consultation.

- More than 20 screening-level EAs were active as of April 1, 2007, and four were initiated during 2007–08. Screenings included the development of EA guidelines for the Commission Tribunal's decision; for example, Zircatec Precision Industries Inc.'s proposed production of slightly enriched uranium fuel bundles at its Port Hope facility, the proposed Caribou Project at the McClean Lake Operation, and the proposed construction and operation of a bulk materials landfill at the Chalk River Laboratories.
- During 2007–08, three comprehensive studies were also underway. These included the drafting of the EA track report for AREVA Resources Canada Inc.'s proposed uranium mining operations in northern Saskatchewan for the Commission Tribunal's consideration. Following an April 2007 public hearing, the Commission Tribunal recommended to the federal Minister of the Environment that this project continue as a comprehensive study.
- Initiatives were undertaken to coordinate EA processes for new major projects. These included the drafting of joint review panel agreements with the Canadian Environmental Assessment Agency for Bruce Power's Ontario New Build project and Ontario Power Generation Inc.'s Deep Geologic Repository to house low- and intermediate-level radioactive waste, for which EAs were initiated in February 2007 and May 2007, respectively. In support of these two projects, discussions were held with the public and other stakeholders as well as the Saugeen Ojibway First Nations, and a consultation plan was completed. A review panel is also being established for Ontario Power Generation Inc.'s Darlington New Build project.

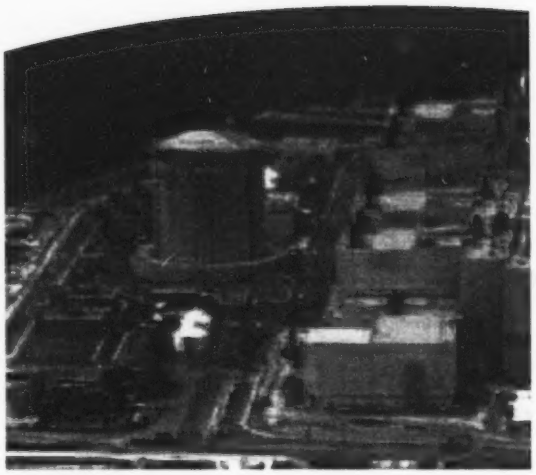
CNSC addressed growing interest in the development of new nuclear power plants

No new reactors have entered service in Canada since 1993, but with the projected need for more energy and the age of existing reactors, the need for and interest in building new nuclear plants has been growing.

Since August 2006, CNSC has received three applications that may eventually lead to the construction of new nuclear power plants in Canada. In late 2006, CNSC established a New Reactor Licensing Division to focus on developing a modern regulatory framework for licensing new nuclear power plants, documenting licensing requirements and creating guidelines to meet these requirements. This material builds upon many years of licensing and compliance experience with Canada's existing reactors and on international guidelines and experience.

In anticipation of more concrete interest in building new reactors, CNSC also issued INFO-0756, *Licensing Process for New Nuclear Power Plants in Canada*, in February 2006. This document explains the key steps in licensing a new reactor, taking into consideration the requirements of the NSCA and its regulations. In March 2007, CNSC published *Information on Design Review Process for New Build* to elaborate on the review of reactor designs within the licensing and EA processes. At the end of March 2008, CNSC was revising this document to include information about the joint review panel process, which integrates EA and

CNSC ensures that adequate safety analyses are completed during the construction, operation or decommissioning of a nuclear power plant.



regulatory procedures into a concurrent process. Under a joint review panel, an EA can occur at the same time as the review of an application for a related licence to prepare a site. The joint review panel is established as a single body to make appropriate decisions about the EA and the related licence to prepare a site at different stages of the process.

The applications that CNSC received in late 2006 from Bruce Power Inc. and Ontario Power Generation Inc., for licences to prepare sites for future construction and operation of new nuclear power plants, have triggered EAs that will require a few years to complete.

- During 2007–08, it was decided to refer both Bruce Power's New Build project and Ontario Power Generation Inc.'s Darlington New Nuclear Power Plant project to review panels. CNSC has been working with the Canadian Environmental Assessment Agency to develop the guidelines and joint panel agreements for these EAs. Site preparation for either of these projects would commence in 2009 at the earliest, and would only proceed once EAs are completed. In addition, the Commission Tribunal cannot issue a site preparation licence unless a decision has been made as a result of the EA that the project may proceed.
- It is expected that the draft EA guidelines and draft joint panel agreement for Bruce Power's New Build project will be issued for public comment in early fiscal 2008–09, and that Bruce Power will submit its Environmental Impact Statement in Fall 2008. Additionally, $50,000 in participant funding was made available in July 2007 to promote public participation in this project's EA.
- For the Darlington New Nuclear Power Plant project, the draft EA guidelines and draft joint panel agreement are planned to be released for public comment in Summer 2008, and Ontario Power Generation Inc. expected to submit its Environmental Impact Statement in Spring 2009. Participant funding in the amount of $75,000 was allocated for this EA.
- In March 2007, Bruce Power Alberta applied to CNSC for a licence to prepare a site for future construction and operation of new nuclear power reactors in Peace River, Alberta. This application has not yet triggered an EA, as CNSC is awaiting a project description.

CNSC provided regulatory oversight for nuclear power plant refurbishment and potential construction of new reactors

Canadian utilities are undertaking projects to extend the operating lives of several of their nuclear power plants. A project to extend the life of a nuclear plant represents a commitment to continued long-term of the facility, and it may involve the replacement or refurbishment of major plant components, substantial modifications to the plant, or both.

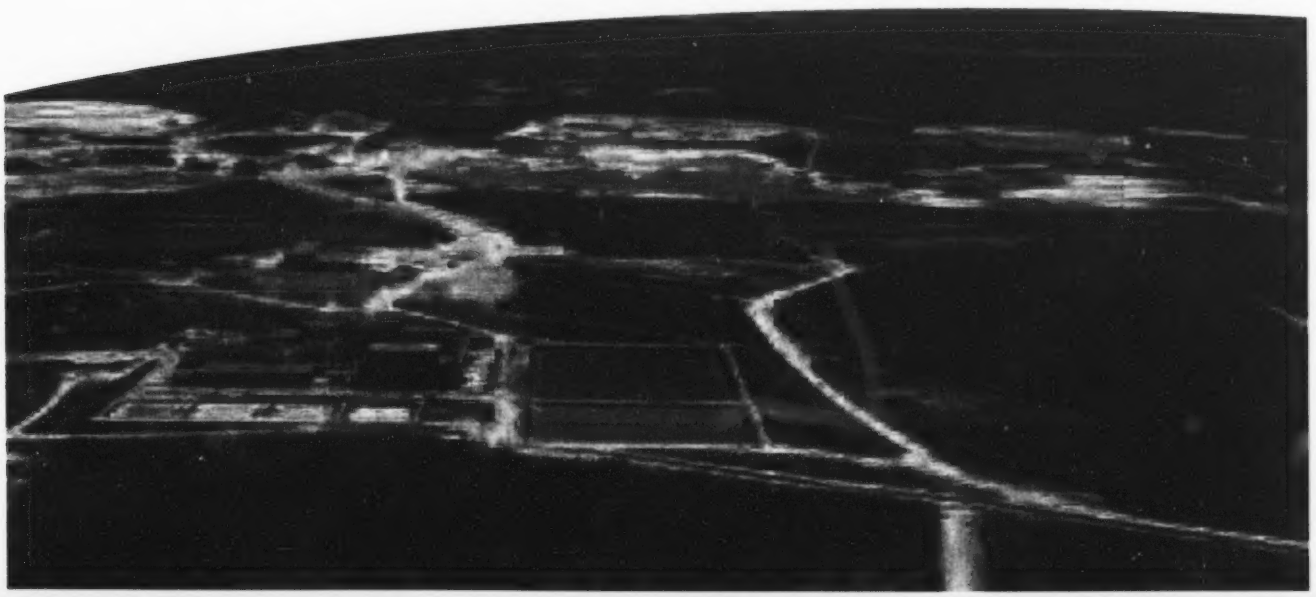
CNSC is responsible for the regulatory oversight of nuclear power plant life extension projects, and considers it to be in the public interest that licensees address modern, high-level safety goals and meet applicable regulatory requirements for safe and secure long-term operation of nuclear power plants. To this end, CNSC amends nuclear power plant licences to introduce specific conditions for the regulatory control of life extension projects. Throughout a life extension project and subsequent reactor operation, nuclear power plant licensees are expected to adhere to requirements of the NSCA, the CEAA and associated regulations, as well as to all licence conditions.

Regulatory approval for a refurbishment project or related licences will only be granted after an EA has been completed and has received Commission Tribunal approval. When considering life extension of a nuclear power plant, the licensee must also undertake an integrated safety review (ISR), which is a comprehensive assessment of nuclear power plant design and operation. The ISR evaluates the plant's current state, operations and performance to determine how well the plant conforms to modern standards and practices, and to identify any factors that would limit safe long-term operation. Operating experience in Canada and around the world, new knowledge from research and development activities, and advances in technology, are taken into account. This enables the determination of reasonable and practical modifications that should be made to the plant's systems, structures, and components and to management arrangements, in order to increase facility safety to a level comparable to that of modern nuclear power plants and to allow for long term operation. Guidance on ISRs is found in the IAEA's *Periodic Safety Review of Nuclear Power Plants – Safety Guide.*

Licensees participate in public hearings for licence renewals that will be in effect at the time of life extension activities. At these hearings, licensees must demonstrate to the Commission Tribunal that they are qualified and will make adequate provisions to protect health and safety while carrying out life extension activities. CNSC personnel may recommend licence conditions that require licensees to demonstrate that refurbishment activities have been completed. The Commission Tribunal will then verify the successful completion of all appropriate commissioning tests and verifications before granting final approval to return facilities to service. Following a nuclear plant's return to full-power operation, CNSC will continue to monitor the facility through its regulatory oversight program.

In February 2008, CNSC published RD-360, *Life Extension of Nuclear Power Plants*, to inform licensees about the steps and phases to consider when undertaking a project to extend the life of a nuclear power plant.

For all Canadian nuclear power plants undergoing refurbishment (Point Lepreau Generating Station, Bruce A Nuclear Generating Station and Pickering B Nuclear Generating Station), CNSC considered ISRs prepared and submitted by licensees in accordance with the IAEA's *Periodic Safety Review of Nuclear Power Plants – Safety Guide.*



CNSC is providing regulatory oversight for refurbishment activities that are in progress at the following sites:

+ units 1 and 2 at the Bruce A Nuclear Generating Station, which are scheduled to return to service in 2009, subject to Commission Tribunal approval
+ the Point Lepreau Nuclear Generating Station, which is scheduled to return to service in 2009, subject to Commission Tribunal approval

For the Point Lepreau refurbishment, an agreement is being developed between CNSC, the licensee (New Brunswick Power Nuclear), and the New Brunswick Department of Public Safety for an accredited Authorized Inspection Agency (AIA). The accredited AIA will act as an independent third party to provide services pertaining to pressure boundaries, as required by the Canadian Standards Association's N285 series and B51 standards.

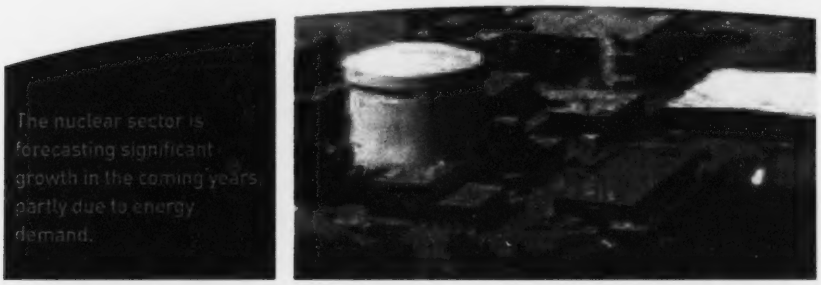
In addition, CNSC is engaged in activities leading to determination of the scope of work for refurbishment of units 5, 6, 7 and 8 at the Pickering B Nuclear Generating Station, including an EA and an ISR. The licensee is performing pre-refurbishment feasibility studies, and work is forecasted to begin in 2014 if the Government of Ontario agrees to proceed. CNSC is also overseeing the process to place the Pickering A Nuclear Generating Station's units 2 and 3 in a guaranteed defueled state, to prepare for future decommissioning. Unit 2 is currently defuelled, and unit 3 is in a guaranteed shutdown state, with defuelling in progress. A screening-level EA is currently ongoing for this project at units 2 and 3, which, when complete, will allow these units to be placed in a safe storage state.

CNSC expects regulatory activities to begin in the next two years for projects currently in the early planning stages by licensees at the following sites:

+ units 5, 6, 7 and 8 at the Bruce B Nuclear Generating Station
+ the Gentilly-2 Nuclear Generating Station
+ units 1, 2, 3 and 4 at the Darlington Nuclear Generating Station

CNSC addressed growing Canadian interest in uranium mining

+ CNSC has received six letters of intent for new mines throughout Canada. These include two from Saskatchewan and one each from Nunavut, Ontario, Québec and Labrador. During 2007–08, CNSC held ongoing discussions with responsible jurisdictions on developing appropriate EA processes.
+ The level of public support for uranium exploration and new mines varies considerably across the country. During 2007–08, CNSC held public meetings in support of Aboriginal governments in Canada's north to assure Canadians that any new mining operations would be subject to regulatory requirements and controls.
+ CNSC received and accepted invitations to make presentations on the regulation of uranium mining activities:
  - a uranium recovery workshop in Denver, Colorado, hosted by the US National Mining Association and US Nuclear Regulatory Commission
  - a conference in Whistler, British Columbia, hosted by provincial ministers of energy and mines and organized by a subcommittee of the Intergovernmental Working Group on the Minerals Industry



- CNSC continued monitoring existing uranium mines to verify compliance with regulatory and licence requirements, and ensured that findings were accurately reported to stakeholders and the Commission Tribunal.

CNSC oversaw the licensing of nuclear substances

CNSC provides regulatory oversight for 3,174 active licences for nuclear substances. The Commission Tribunal grants specific Designated Officers the power to issue certain types of licences and certificates. Most licences for nuclear substances fall into this category. In 2007–08, 228 new licences for nuclear substances were issued, along with 1,007 licence amendments and 466 licence renewals.

There has been a steady increase (10 percent) in the number of licensed facilities for the delivery of radiation therapy treatment throughout the country over the past several years. Another emerging trend among Canadian radiation therapy centres in the past year has been to replace existing radiation therapy equipment well before old equipment reaches the end of its life. The reason for this change has been the development of new-generation machines with more sophisticated treatment delivery tools and enhanced imaging capabilities. An estimated 10 percent of existing linear accelerators are replaced in this manner each year. These trends are expected to continue at these rates.

With the increasing acceptance of Positron Emission Tomography (PET) as the imaging mode of choice for cancer management, the number of licensed PET centres across Canada has more than doubled over three years. There has also been a corresponding increase in the number of PET cyclotrons used for the production of radioisotopes in Canada. Three applications for new PET cyclotron facilities are in the process of regulatory assessment, and an equal number of sites are in the application preparation stage. PET is expected to be an area of significant growth in the years to come.

CNSC addressed the safe operation of Canadian nuclear waste management facilities

+ CNSC renewed operating licences for the following waste management facilities:
  - Ontario Power Generation Inc.'s Pickering Waste Management Facility
  - Ontario Power Generation Inc.'s Western Waste Management Facility located at the Bruce Nuclear Generating Station
+ Hydro-Québec's operating licence for its waste facility in Gentilly, Québec, was amended to permit the construction of a new waste area.
+ Ontario Power Generation Inc. was granted an operating licence for its newly completed used dry fuel storage facility located at the Darlington Nuclear Generating Station.
+ New Brunswick Power Nuclear received CNSC's approval to operate the newly completed Phase 1 expansion of its waste management facility in Point Lepreau, New Brunswick.

2007–08 Certification Activities

CNSC modified certification processes

+ In November 2000, CNSC decided to withdraw from directly examining shift personnel whose positions were referred to in nuclear power plant operating licences. Thereafter, CNSC would continue to certify shift personnel, but would rely on sound training programs and certification examinations administered by licensees in accordance with their licences. The assurance of competence of candidates for CNSC certification would be obtained from increased regulatory oversight of the licensees' training and examination programs. This regulatory oversight was approved by the Commission Tribunal on September 13, 2007, and is outlined in RD-204, *Certification of Persons Working at Nuclear Power Plants*, which was published on February 15, 2008. The Commission Tribunal will be asked to make a decision on the implementation of the program

and on the final transfer of responsibility for certification examination to licensees.

+ A proposed amendment to the *Class II Nuclear Facilities and Prescribed Equipment Regulations* will require the certification of radiation safety officers in Class II nuclear facilities, the majority of which are cancer treatment clinics. In line with its regulation-making process, CNSC sought initial comments for the proposed amendment, and a formal consultation period is expected to follow.

+ In 2006–07, CNSC initiated a review of the processes for certifying exposure device operators. Following meetings with the radiography industry and Natural Resources Canada, a CNSC working group prepared a report with recommendations to improve the certification process for these operators, who had previously been granted lifetime certification. This past year, CNSC completed its review of the certification processes and is evaluating the report's recommendations. CNSC will continue meeting with the radiography industry and Natural Resources Canada regarding any changes to exposure device operator certification.

CNSC addressed continued demand for certifying transport packaging, radiation devices and Class II prescribed equipment

+ CNSC continued assessing applications for the certification of transport package designs, special-form radioactive material, and transport under special arrangement. Certification applications for radiation devices and Class II prescribed equipment (a category that includes nuclear devices used in medicine, research and industry) were also assessed. In all, during 2007–08, CNSC issued 48 certificates related to transport (18 Canadian package design certificates, 20 endorsements of foreign package design certificates, 8 special form certificates and 2 special arrangements certificates) and 52 certificates related to certification of radiation devices and Class II prescribed equipment.

Nuclear safety means

well-managed growth

Increased global demand for energy and clean, sustainable energy sources, along with rapid expansion in nuclear medicine are driving significant growth in the nuclear sector. As Canada's nuclear regulator, CNSC is adjusting to meet these challenges and is committed to ensuring that all nuclear activity is conducted safely and securely while protecting Canadians, their health and the environment.

Highlight: **New Nuclear Power Plants and Uranium Mines**

Throughout 2007–08, CNSC responded to the growing interest in constructing new nuclear power plants. No new power reactors have entered service in Canada since 1993, but as existing reactors reach the end of their operating lives, the nation's energy needs must be addressed in a safe, timely and efficient manner.

CNSC received applications in 2006 from Bruce Power Inc. and Ontario Power Generation Inc. for licences to prepare sites for future construction and operation of new nuclear power reactors. Pursuant to the *Canadian Environmental Assessment Act,* EAs were initiated for these projects in February 2007 and May 2007, respectively. The EAs will require several years to complete, and site preparation would likely start in 2009 at the earliest, once EAs were completed. In addition, the Commission Tribunal cannot issue a site preparation licence unless a decision has been made as a result of the EA that the project may proceed.

By the end of 2007, CNSC had received a third application to construct a new nuclear power plant in the Peace River region of Alberta. These applications may eventually lead to the construction of new nuclear power plants in Canada. CNSC laid the foundation for a new CNSC directorate, to be created in the 2008–09 fiscal year, that will be dedicated to major new build projects such as power plants and uranium mines and mills. Further anticipating upcoming interest, CNSC issued a new information document, *Licensing Process for New Nuclear Power Plants in Canada* (INFO-0756) which explained the key steps in licensing a new power plant under the requirements of the *Nuclear Safety and Control Act* and its regulations. The document was first issued in February 2006 and was being revised in March 2008 to include information about the joint review panel process, which integrates an Environmental Assessment (EA) and regulatory procedures into a concurrent process. Under a joint review panel, an EA can occur at the same time as the review of an application for a related licence to prepare a site. The joint review panel is established as a single body to make appropriate decisions about the EA and the related licence to prepare a site at different stages of the process.

In March 2008, Bruce Power Alberta applied to CNSC for a licence to prepare a site for future construction and operation of new reactors in Peace River, Alberta. An EA has not yet been triggered for this project.

CNSC has developed regulatory documents that provide guidelines for safety analysis, plant design and site evaluation for new nuclear power plants. RD-310, *Safety Analysis for Nuclear Power Plants*, was approved by the Commission Tribunal and published in 2007–08. Drafts of RD-337, *Design of New Nuclear Power Plants*, and RD-346, *Site Evaluation for New Nuclear Power Plants*, were approved for consultation and publication by the Commission Tribunal in September 2007 and are expected to be presented for final Commission Tribunal approval in early 2008–09. In March 2007, CNSC published *Information on Design Review Process for New Build* to elaborate on the review of reactor designs within the licensing and EA processes that were originally set out in INFO-0756.

Canada is one of the few countries whose nuclear activities cover the entire nuclear fuel cycle, including uranium mining, nuclear fuel fabrication and nuclear power generation. With the potential for significant worldwide growth in the nuclear power industry, domestic interest is rising in related areas such as uranium mining, processing and conversion, and nuclear fuel fabrication. Several companies have signalled their intent to pursue the construction of new uranium mines in Canada. However, no formal applications had been submitted to CNSC as of the end of the 2007–08 fiscal year.

CNSC is responsible for regulating uranium mines and mills and has put measures in place to prevent or control licensees' release of chemicals into the environment. CNSC and Environment Canada will produce joint annual reports on the initiatives to manage this aspect of uranium-related operations, and the first report is expected to be released in 2008.

2007–08 CNSC Activities

Compliance

A key part of CNSC's regulatory approach is its compliance program, which monitors licensee conformance with regulatory requirements and licence conditions. CNSC's compliance program aims to maintain a safe nuclear sector and ensure that Canada meets its international commitments on the peaceful use of nuclear energy and materials.

To ensure compliance, CNSC uses a program that applies verification, monitoring and reporting measures to licensees. CNSC tailors this compliance program to licensee type; for example, compliance requirements for nuclear power plants differ from those for facilities that process nuclear substances.

CNSC's compliance program includes a variety of "desktop" reviews of documentation, and Type I and Type II inspections. Type I inspections are thorough, resource-intensive, complex on-site reviews that assess and verify key areas of licensee compliance. Type II inspections are point-in-time, snapshot verifications of licensee activities, which focus on outputs or performance of licensee programs, processes and practices. Findings from Type II inspections play a key role in identifying where a Type I inspection may be required to determine systemic problems in licensee programs, processes or practices.

In addition to its compliance program, CNSC applies further compliance verification measures to licensees based on level of risk. These measures will vary depending on factors such as a facility's location or environmental setting, a licensee's past compliance records, established safety programs, and the risk associated with non-compliance. For example, for a facility with a strong compliance track record and where the impact of non-compliance would be minimal, CNSC's additional compliance measures would be less onerous than those applied to a licensee whose non-compliance could have a significant safety impact.

CNSC regularly monitors licensees according to the requirements expressed in their licences. Any non-compliance receives appropriate attention and follow-up to correct the situation and to ensure that health and safety are not compromised.

Finally, as a signatory to the *Treaty on the Non-proliferation of Nuclear Weapons*, Canada is required to conclude an agreement with the IAEA to enable the IAEA to verify that the country is fulfilling its obligations not to develop, manufacture, or otherwise acquire nuclear weapons or other nuclear explosive devices. Pursuant to the agreement, the IAEA uses several measures, collectively referred to as "safeguards," to verify that declared nuclear material is not diverted to nuclear weapons or other nuclear explosive devices and to provide credible assurance on the absence of undeclared nuclear material and activities. CNSC is the designated governmental authority responsible for implementing safeguards agreements between Canada and the IAEA.

2007–08 Compliance Activities

CNSC applied risk-informed decision making to the regulation of nuclear power plants

The regulatory framework and decision-making process for regulating nuclear power plants in Canada have always considered risk; however, the methods used to systematically address risk were not formalized. CNSC formed a working group in 2005 to enhance its regulatory capacity to assess risks associated with nuclear power plant licensing and compliance, and to use risk management principles to prioritize regulation and regulatory changes. These efforts were to ensure CNSC's limited resources would be used as effectively as possible, and to plan regulatory activities based on risk analysis, which is a rigorous and well-documented process that links activities to required results, as well as on CNSC personnel's judgement and expertise.

In its 2007 Industry Report, CNSC concluded that the Canadian nuclear power plant industry operated safely overall.

Most of the ratings in the 2007 Industry Report were "B" grades, indicating that licensees met CNSC expectations.

To meet these objectives, the working group identified appropriate risk management tools and methods, organized discussion and training sessions, interacted with stakeholders, and produced documents that defined risk management in CNSC's regulatory context. The group also described basic concepts of risk and risk management, highlighted typical risk decision-making situations at CNSC, and outlined a decision-making process based on the Canadian Standard CSA-Q850 for managing risk.

The new process was introduced in May 2006 for a 12-month trial period that included one-day training sessions and limited applications of the method. The trial period ended with satisfactory results, and the process is now being formally incorporated in CNSC's Management System Manual.

During and following the trial period, the process was successfully applied to many situations requiring regulatory decisions related to power reactor operation. The most recent use was in February 2007, when CNSC senior management met with members of the Canadian Nuclear Utilities Executive Forum to discuss significant matters of concern, including the path forward to resolve outstanding safety issues at Canadian nuclear power plants. Acting on one of the recommendations of that meeting, CNSC used the risk-informed decision-making process to identify approximately 75 CANDU safety issues and rank the 21 most significant ones according to risk. These safety issues were identified through extensive national and international research as well as interaction with numerous specialists, and findings were communicated to the industry later in the year. As a result, several of the safety issues have been closed. CNSC continues to apply the risk-informed decision-making process to identify adequate risk control measures for any of these safety issues that remain outstanding.

CNSC is acknowledged to be one of the world's leading organizations in developing and applying such a rigorous process in regulatory decision making. When applied to nuclear power reactor regulation, CNSC's risk-informed decision-making process improves regulatory transparency, efficiency and effectiveness, and results in defensible and pragmatic regulatory decisions. CNSC is gradually widening the use of this process throughout the organization to increase consistency in decision making and, as a result, regulatory predictability. Areas where the process will be used in the near future include resource allocation, prioritization of activities, and screening of research programs.

CNSC assured Canadians of the continuing compliance and safety performance of licensees

CNSC carried out its regulatory oversight throughout 2007–08 to monitor compliance with the NSCA, regulations and licence conditions. Where deficiencies were noted, CNSC undertook a graduated approach to ensure compliance.

+ **Nuclear power plants:** Every year, CNSC publishes the CNSC Staff Report on the *Safety Performance of the Canadian Nuclear Power Industry* (Industry Report). This document summarizes CNSC's assessment of the safety performance of nuclear power plants in Canada based on the legal requirements of the NSCA and its regulations, as well as the conditions of operating licences. The Industry Report is a comprehensive report card of the performance of Canada's five nuclear power reactor sites: Bruce, Darlington, Pickering, Bécancour, and Point Lepreau. In the 2007 Industry Report, CNSC concluded that overall, the Canadian nuclear power plant industry operated safely. The vast majority of grades were "B" ratings, indicating that licensees met CNSC expectations. Under the Industry Report rating system, CNSC assigns a "C" grade when licensee performance falls below requirements. A "C" rating does not mean a safety risk is unacceptable. Rather, it means that CNSC continues to closely monitor aspects of facilities that received "C" grades, to ensure that licensees or applicants are making every effort to mitigate the issues identified and fully meet CNSC requirements. During 2007, no nuclear power reactor facility received lower than a "C" grade.

  The 2007 report card on Canadian nuclear power plant performance can be found on page 76 of this annual report. The complete 2007 Industry Report, along with Industry Reports from previous years, is available on CNSC's Web site at nuclearsafety.gc.ca

  In 2007–08, CNSC's nuclear power plant compliance activities included routine field and control-room inspections, audits against regulatory requirements and standards, and reviews and assessments of licensee reports such as individual safety analysis reports and detailed event reports. In addition, CNSC conducted 112 safety-area focused inspections; examples include areas such as emergency preparedness, environmental protection, security, radiation safety, maintenance and equipment fitness for service. Where needed, appropriate enforcement actions were taken.

  CNSC compliance activities also included close monitoring of outage activities and plant refurbishments.

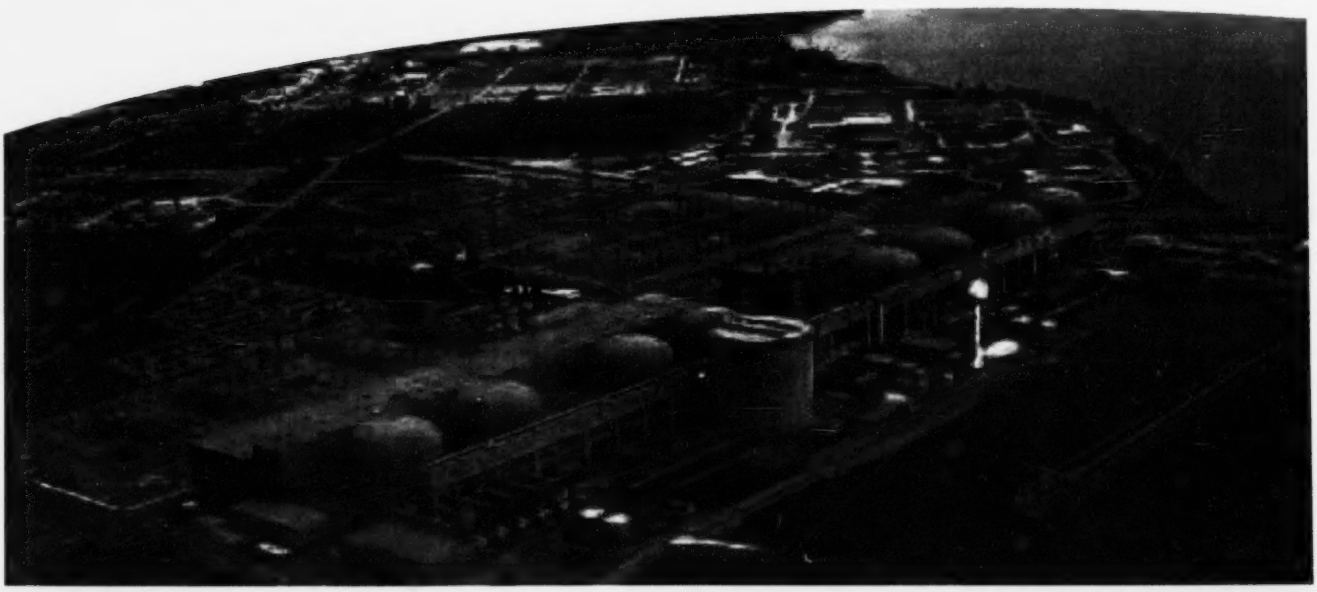
+ **Nuclear cycle and research facilities:** In addition to power plants, CNSC assesses the performance of more than 80 nuclear facilities, which range in diversity and location from uranium mines in Saskatchewan, to fuel cycle and nuclear substance processing facilities in Ontario, to various research and waste management facilities across Canada.

  Due to the complexity and uniqueness of these facilities, a risk-ranking process based on national risk management standard Q850/97 is being used to develop CNSC's annual compliance program. Technical assessments based on key safety-significant programs determine the type and frequency of inspections to be performed at each facility. In 2007–08, all facilities were inspected at least one time by CNSC inspectors based in Saskatoon, Chalk River and Ottawa. In total, 123 inspections (nine Type I and Type II) were carried out, resulting in a

variety of follow-up activities to ensure compliance with site-specific licences, the NSCA and its regulations.

In addition to facility inspections, CNSC's compliance and verification activities included reviews of licensee's quarterly and/or annual reports along with any reports submitted as a result of reportable events that occurred throughout the year.

- As noted in CNSC's 2006–07 annual report, a flood occurred in October 2006 at Cameco Corporation's Cigar Lake uranium mining facility. Since then, the facility has been in recovery mode, and operations have been limited to the completion of authorized surface construction and remediation activities related to the flooded underground area. Corrective actions identified by the flood investigations and CNSC's review of the investigation reports were provided to the Commission Tribunal as a Significant Development Report. CNSC continues to monitor the implementation of Cameco Corporation's phased corrective action plans.
- Also noted in the previous CNSC annual report was Cameco Corporation's proposed expansion of its Key Lake facility, which would have allowed for an increase in the production limit of uranium oxide from 18 million to 22 million pounds. The EA for this expansion is currently on hold pending completion of improvements to the effluent treatment systems to reduce effluent contaminant loadings, and subsequent verification by CNSC. In 2007–08, activities related to effluent treatment plant upgrades to reduce effluent loadings to the environment were initiated. A plan to expand a separate plant to treat groundwater and discharge from the Deilmann Pit area was reviewed, approved and commissioned.
- On July 13, 2007, during a scheduled maintenance shutdown at the Cameco Port Hope conversion facility, contamination in the soil beneath Building 50 was discovered in an excavation made to install a new cooling water tank. Following this discovery, all production operations inside the building were shut down, and an independent investigation to determine the sources and extent of the contamination was initiated by Cameco Corporation. With the discovery of this incident, CNSC and the Ontario Ministry of the Environment enhanced the regulatory oversight of the situation to prevent unreasonable risk to human health and the environment.



In October 2007, Cameco submitted a root cause investigation report to the Commission along with a remedial action plan (RAP) to collect and treat the effected groundwater as well as a plan to rehabilitate Building 50, to address any potential adverse environmental impacts from the incident. In mid-October 2007, CNSC personnel issued a request under subsection 12(2) of the *General Nuclear Safety and Control Regulations* to direct Cameco Corporation to install a groundwater treatment system to assist in mitigating potential impacts of the contamination. Cameco Corporation was also requested to submit a revised RAP to address the subsurface contamination.

Canada has set an international example in ensuring the safety and security of high-risk radioactive sealed sources.
CNSC issued more than 300 licences for sealed-source exports to more than 40 countries.

By the first quarter of 2008, a groundwater collection and treatment system had been installed and rehabilitation work within the building had been initiated. Approximately 660 tons of concrete floors and 3,530 tons of soil located beneath Building 50 and adjacent to the south side of the building were removed. The design and installation of the liquid effluent handling system being installed by Cameco Corporation has been inspected as part of the enhanced regulatory oversight undertaken throughout the event.

Most recent groundwater and surface water monitoring data indicated that although trace amounts of contaminants from the sub-surface of Building 50 had reached the Port Hope harbour's turning basin, there were no indications that water quality in the harbour had changed. Based on the review of the information available to date, CNSC concludes there is no immediate risk to the environment or the general public.

It is anticipated that the production operations at Building 50 of Cameco Corporation's Port Hope conversion facility will resume by the fourth quarter of 2008. CNSC will continue its enhanced regulatory oversight of the situation

- During the reporting period, an enforcement order was issued to Western Cooperative Fertilizers Limited (WESTCO), which required the company to take actions and measures to protect the environment and the health and safety of persons in relation to a site in Calgary, Alberta. The order was issued to WESTCO, as owner of the property, when the company took possession of a building and lands that housed nuclear substances and that had previously been under the control of ESI Resources Inc., a former CNSC licensee.

+ **Nuclear substances:** CNSC uses a graduated enforcement approach that respects requirements for the health of Canadians to address non-compliance with respect to nuclear substances. Enforcement measures to restore compliance with regulatory requirements cover a spectrum of actions. These may range from a simple notification to a licensee along with a listing of what the licensee needs to do to meet requirements, to the revocation of a licence. Any enforcement measures must be taken in accordance with CNSC's authority under the NSCA and applied in a manner that is lawfully reasonable, equitable and consistent.

CNSC's role in enforcing compliance with nuclear substance-related licences was illustrated in June 2007, when the Commission Tribunal concluded that 588972 Alberta Ltd. (operating as Enviropac) in Edmonton, Alberta, was no longer qualified to carry on the activities authorized by its licences.The Tribunal then suspended the licences for storage, processing of unsealed nuclear substances and calibration that it had previously issued to Enviropac. In July 2007, CNSC seized all nuclear substances and prescribed equipment at the Edmonton site, and removed high-risk sealed sources and

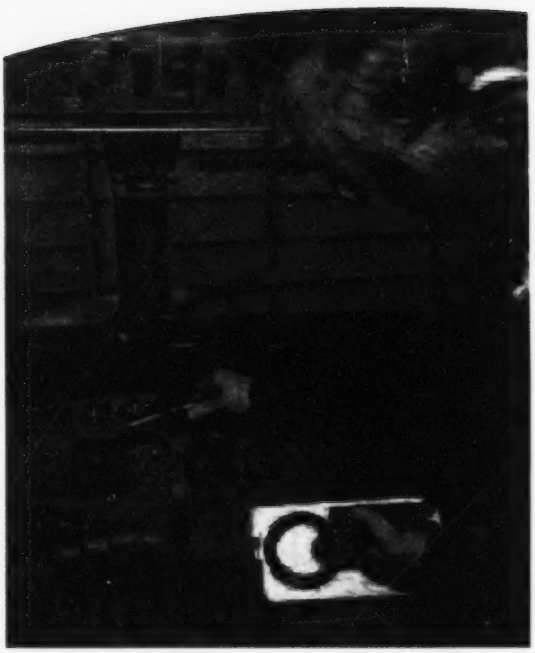
transferred them to a licensed facility for further examination, pending a Federal Court order for disposal. An independent contractor carried out work in February 2008 to remove all remaining nuclear substances and prescribed equipment from the Enviropac site, and the nuclear substances were stored at a licensed facility, also pending a Federal Court order for disposal.

CNSC led or participated in 75 Type I and 1,325 Type II regulatory compliance inspections of licensees in 2007–08. In addition, 2,267 desktop reviews of annual compliance reports were completed in the fiscal year.

"Events" are unusual or unplanned occurrences with radioactive nuclear substances or prescribed equipment, which licensees must report to CNSC within specified timeframes. Reporting requirements for unplanned "events" are derived from the NSCA and the *General Nuclear Safety and Control Regulations*. CNSC responds to and evaluates the appropriateness, completeness and timeliness of information reported by the affected licensee. All reported events are assigned a risk classification based on several factors such as the nature of the material and the type of use. In 2007–08, there were 271 events reported to CNSC, most of which were classified as minor events. There were no events involving Category 1 sources. Eighteen events (out of 271) were related to Category 2 sources. CNSC reviewed and ensured resolution of all reported incidents.

+ **Industrial radiography:** CNSC worked actively with approximately 130 industrial radiography licensees and convened regional meetings to explain regulatory requirements, responding to licensee concerns and describing new regulatory initiatives.

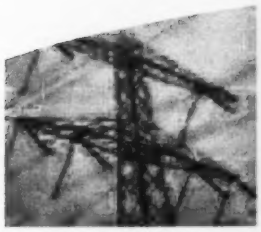
+ **Transportation:** CNSC assessed 18 transportation security plans, 118 transportation licence applications, 30 import licence applications and 71 export licence applications from the security requirements perspective.

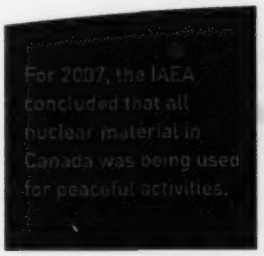


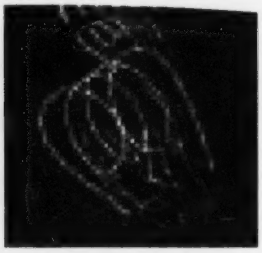
+ **Nuclear security:** An important part of CNSC's compliance program is verifying conformity with the *Nuclear Security Regulations*. CNSC has a specialized division of experienced security professionals who conducted five Type I security inspections at Canadian nuclear power plants and at AECL's Chalk River Laboratories.

  In addition, CNSC performed 15 Type II security inspections at nuclear power plants, waste management facilities, Chalk River Laboratories and at AECL's Whiteshell Laboratories. CNSC personnel also performed 150 Type II security inspections at those licensed facilities that use sealed radioactive sources. CNSC personnel reviewed 10 site security reports submitted by licensees who store Category I and II nuclear material to ensure they met CNSC's requirements.

CNSC's enforcement measures are aimed at licensees and persons whom it regulates. However, persons or institutions not requiring a CNSC licence but who conduct activities that fall under the NSCA and







regulations must also meet legal requirements for radiation protection. This group includes certified persons and transport carriers, who submit their radiation protection program documentation to CNSC.

CNSC ensured Canada met international commitments

+ For 2007, the IAEA once again concluded that all nuclear material in Canada was being used for peaceful activities. Based on the results of its verification activities in Canada throughout the year along with all available safeguards-related information, the IAEA declared it found no indication of the diversion of nuclear material, pursuant to the Canada/IAEA Safeguards Agreement, and no indication of undeclared nuclear material or activities in Canada. Canada is one of 47 Member States for whom the IAEA has drawn this comprehensive safeguards conclusion.

+ In implementing the Canada/IAEA Safeguards Agreement, CNSC reviewed and submitted an unprecedented number (13) of new or updated facility design information questions, which form the basis for effective safeguards approaches. CNSC personnel also worked extensively on new safeguards approaches and procedures for the defuelling of two reactors at the Pickering A Nuclear Generating Station. Two high-level safeguards implementation meetings were held with the IAEA, and all action items identified for Canada at those meetings have been completed.

+ All imports and exports of nuclear material, such as uranium, were licensed and controlled through CNSC import and export licences issued under the *Nuclear Non-Proliferation Import and Export Control Regulations*. In accordance with Canada's international commitments, CNSC also applied additional accounting, tracking and administrative controls to assure Canada and the supplying country that material would be used solely for peaceful purposes. CNSC personnel collaborated with Canada Border Services Agency officials to address import and export detentions resulting from non-compliance with the NSCA or licence conditions.

+ Over the past two years, Canada has undertaken two major initiatives to meet requirements of the IAEA's *Code of Conduct on the Safety and Security of Radioactive Sources*:

  - inventory tracking controls using a Sealed Source Tracking System (SSTS), within an upgraded National Sealed Source Registry (NSSR) that was implemented in 2006. Using a secure, Web-based system, licensees report possession and transactions involving sealed sources within strict reporting timeframes. Sealed sources, which are radioactive nuclear substances in sealed capsules, are used widely in industry, medicine and research.The SSTS and NSSR allow CNSC to track high-risk radioactive sealed sources from their manufacture to their final disposition. To implement the system, CNSC amended licences to legally require the reporting of radioactive source transactions.

  - implementation of import and export controls for sealed sources. Canadian industry is the leading global supplier and exporter of risk-significant radioactive sealed sources. As of April 1, 2007, those wishing to export Category 1 or Category 2 sealed sources need to obtain transaction-specific export licences from CNSC. During 2007–08, CNSC issued more than 300 licences for sealed-source exports to more than 40 countries. With this step, CNSC completed the second of two initiatives to adopt the IAEA's *Code of Conduct on the Safety and Security of Radioactive Sources* and to fully implement the IAEA's *Guidance on the Import and Export of Radioactive Sources*, and is now fully compliant with the Code. Together with the NSSR, the strengthened controls will assure Canadians and the global community of secure international transfers. As the first country with such robust inventory tracking, Canada has set an international example in ensuring the safety and security of high-risk radioactive sealed sources.

    Throughout 2007, the NSSR continued to expand its information on high-risk sources (Categories 1 and 2) as licensees reported their transactions.

By the end of December 2007, the registry had information on 13,556 radioactive sealed sources in Canada, an increase of 6,406 over the previous year.

During 2007, the SSTS was tracking the location and transfers of 2,198 Category 1 sources and 8,404 Category 2 sources. In addition, the NSSR contained information on 2,709 sources in Categories 3, 4 and 5, which are considered moderate- and low-risk sources and are not subject to mandatory tracking. The SSTS registered more than 39,000 transactions of all types throughout the year, which represents a 31-percent increase over 2006. This dramatic increase is partly attributed to increased outreach, resulting in better awareness in the licensed community and partly to the inclusion of new information in the database submitted by manufacturers of sealed sources.

National Sealed Source Registry Statistics

	As of Dec 31, 2006	As of Dec 31, 2007
Number of transactions[1]	30,167	39,528
Number of sources in NSSR (all categories) in Canada	7,150	13,556
Number of Category 1 sources tracked in Canada	1,638	2,198
Number of Category 2 sources tracked in Canada	3,920	8,404
Number of Category 3 sources recorded	995	1,351
Number of Category 4 sources recorded	500	1,312
Number of Category 5 sources recorded	97	291

[1] This number represents all transactions for the NSSR and SSTS, including new sources added by manufacturers and imports and exports.

Cooperative Undertakings

CNSC works both in Canada and internationally to advance nuclear safety, security and non-proliferation, and to share best practices with other agencies. Contributing extensively to the activities of the IAEA, CNSC cooperates with other regulators in maintaining a safe, secure and peaceful international nuclear sector.

2007–08 Cooperative Undertakings Activities

CNSC enabled Canada to meet international commitments to nuclear safety

+ ***Convention on Nuclear Safety***
  As a Contracting Party to the *Convention on Nuclear Safety*, Canada is legally committed to maintaining high levels of safety at its nuclear power plants. The Convention covers siting, design, construction and operation of nuclear power plants, along with radiation protection, quality assurance and emergency preparedness. Under the Convention, Contracting Parties produce reports reviewed by peers and discussed at meetings held every three years. During 2007–08, CNSC led a team of representatives from the nuclear industry and other federal departments in producing and publishing the fourth Canadian National Report. This report demonstrated that, from April 2004 to March 2007, Canada continued to meet its obligations to under Convention's terms and that all Canadian nuclear power plant licensees fulfilled regulatory requirements. It will be presented at the Fourth Review Meeting in April 2008.

+ ***Code of Conduct on the Safety and Security of Radioactive Sources***
  An enhanced import and export licensing and control program for risk-significant radioactive sealed sources was implemented on April 1, 2007. The program meets Canada's commitments to fully implement the import and export control provisions of the IAEA's *Code of Conduct on the Safety and Security of Radioactive Sources* and supplementary *Guidance on the Import and Export of Radioactive Sources*.

CNSC worked with Canadian and international partners to combat terrorism, support nuclear non-proliferation and further nuclear safety

+ **Foreign Affairs and International Trade Canada**
  CNSC collaborated with Defence Research and Development Canada to develop and deliver the International First Responder Training Program, funded by Foreign Affairs and International Trade Canada's Counter-Terrorism Capacity Building Program. The program helps beneficiary countries (currently Indonesia, Malaysia, the Philippines and Thailand) improve their capacity to respond to acts of terrorism. A CNSC team that travels throughout Southeast Asia conducted three training missions during 2007–08, and nearly 2,000 first responders have received on-site training to date. Canadian

Embassies and High Commissions in beneficiary countries have applauded this program, which is recognized as a flagship Canadian initiative.

CNSC worked with Foreign Affairs and International Trade Canada, along with other government departments, to help develop and implement Canadian domestic and international policy, programs, initiatives and measures in the areas of nuclear non-proliferation, safeguards, import/export control and security. This included participating in major non-proliferation and safeguards-related initiatives and events such as:

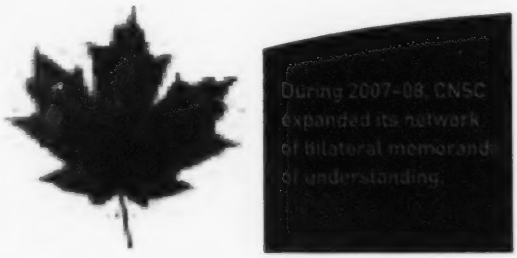
- the 2007 Preparatory Committee meeting under the Treaty on the Non-Proliferation of Nuclear Weapons
- the Consultative Group and the Plenary of the Nuclear Suppliers Group
- IAEA General Conference and Board of Governors
- the Global Initiative to Combat Nuclear Terrorism
- the G8 Non-Proliferation Directors Group
- the United Nations Conference on Disarmament
- the United Nations Security Council Resolution 1540 (preparation of Canada's National Report)
- the Global Nuclear Energy Partnership
- the Global Partnership Advisory Group

CNSC provided technical and policy advice to Foreign Affairs and International Trade Canada, in negotiating and establishing new bilateral nuclear cooperation agreements with potential nuclear trading partner countries, and in amending existing agreements. In addition, CNSC assisted with ongoing implementation of provisions of existing nuclear cooperation agreements by managing and implementing bilateral administrative arrangements with its foreign counterparts.

+ **Nuclear Suppliers Group**
In supporting Canada's international commitments to using nuclear energy and materials only for peaceful purposes, CNSC is an active member of the Nuclear Suppliers Group. This group brings together countries that apply export controls to nuclear substances, equipment and technology, to promote non-proliferation.

+ **Nuclear Energy Agency**
CNSC contributed to the activities of the Organisation for Economic Co-operation and Development's NEA, a forum for sharing information and experience to develop consensus on technical matters and to foster best regulatory practices. CNSC provided Canadian representatives for key NEA committees and working groups, including those on nuclear installation safety, radiation protection and inspection practices.

CNSC continued to participate in and contribute to the Multinational Design Evaluation Programme coordinated by the NEA. This initiative allows regulators who are evaluating new reactor designs to pool their knowledge and experience, providing CNSC with an opportunity to exchange information with its counterparts.



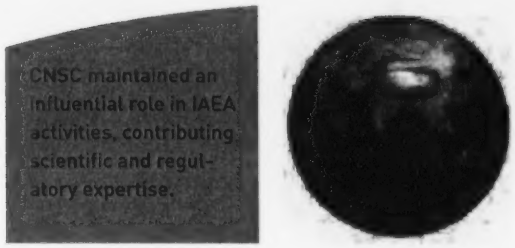
+ **Global Initiative to Combat Nuclear Terrorism**
CNSC maintained active support for and participation in the Global Initiative to Combat Nuclear Terrorism, which unites more than 60 like-minded countries in improving the control and physical protection of nuclear substances and materials, and enhancing the security of civilian nuclear facilities.

+ **CANDU Senior Regulators' Meeting**
In cooperation with the IAEA, CNSC hosted the 2007 annual CANDU Senior Regulators' Meeting in Ottawa, welcoming senior regulatory representatives from all countries operating CANDU reactors (Argentina, Canada, China, India, Pakistan, Romania and South Korea). The forum allowed attendees to share information and experience regarding this Canadian-designed technology.

+ **G8**
CNSC contributes to meetings of the G8 Non-Proliferation Directors Group and became more involved in the G8 Nuclear Safety and Security Group. These groups give CNSC a strong voice in high-level discussions and multilateral initiatives on non-proliferation, nuclear safety and nuclear security.

+ **International Nuclear Regulators Association**
CNSC provides Canadian representation to the International Nuclear Regulators Association (INRA), an international group of senior nuclear regulators from Canada, France, Japan, Spain, South Korea, Sweden, the United Kingdom and the United States. INRA, which operates independently of other international organizations, provides regulators with a forum to discuss nuclear safety.

+ **Approval and certification of packages**
CNSC is developing RD-364, *Joint Canada–United States Guide for Approval of Type B(U) and Fissile Material Transportation Packages*, which helps applicants demonstrate the ability of the given package to meet applicable Canadian or U.S. regulations. It is also intended to help reviewers assess and approve applications. Consultation is expected during the second quarter of 2008–09. A cooperative agreement with the U.S. Nuclear Regulatory Commission and the U.S. Department of Transportation will be established during 2008–09 to implement the guide.



CNSC worked with other nuclear regulators to further nuclear safety and security

+ CNSC expanded its network of bilateral Memoranda of Understanding (MOU) on regulatory cooperation, signing arrangements with the Australian Radiation Protection and Nuclear Safety Agency, the Republic of Korea's Ministry of Science and Technology and South Africa's National Nuclear Regulator. These arrangements provide CNSC with improved opportunities to share expertise on various issues, including CANDU reactor regulation, research reactor safety and uranium mining.

+ CNSC held consultations with regulatory counterparts in countries that are key importers of Canadian-supplied risk-significant radioactive sealed sources, in concert with the April 2007 launch of the enhanced import and export control program for these sources (pursuant to the IAEA's *Code of Conduct on the Safety and Security of Radioactive Sources*). These discussions took place to share information about participating countries' related import and export control programs and to determine how to best harmonize bilateral procedures. Draft bilateral import and export control administrative arrangements were agreed to in principle with three countries, and it is anticipated that these arrangements will be formally established during 2008–09. These bilateral administrative arrangements harmonize control procedures between Canada and recipient/supplier countries to promote efficient transfer authorizations.

+ Following the June 11, 2007 signing of a cooperative arrangement between South Korea's Ministry of Science and Technology and CNSC, meetings with South Korean regulatory representatives were held throughout the year. These meetings allowed fruitful technical discussions about CANDU reactors (used in South Korea) and on CNSC's experience in integrating international standards into domestic regulation.

+ CNSC hosted high-level and working-level meetings with regulatory counterparts from several countries, including the Republic of Korea, the United States and France. A February 2008 meeting, where CNSC hosted a senior representative of France's Nuclear Safety Authority, focused on enhanced Canada–France collaboration on various issues such the regulation of power reactors, tritium and radiation therapy.

+ CNSC's MOU with regulators in China and Romania were due for renewal at the end of 2007–08, but unexpectedly high turn-around times caused these to lapse. CNSC aims to renew these without further delay and to incorporate automatic renewal clauses in all MOUs.

+ As part of ongoing relations with the US Nuclear Regulatory Commission (USNRC), CNSC personnel invited its counterparts to join them in an inspection of a Cameco Corporation facility in Port Hope, Ontario and of a General Electric Canada Inc. facility in Peterborough, Ontario.

+ The USNRC also participated in guided visits to MDS Nordion's Kanata facility as well as AECL's Chalk River Laboratories, both located in Ontario.

+ A brief guided tour of a northern Saskatchewan uranium mine was given to a delegation from the Mongolian People's Republic

CNSC provided leadership in International Atomic Energy Agency activities

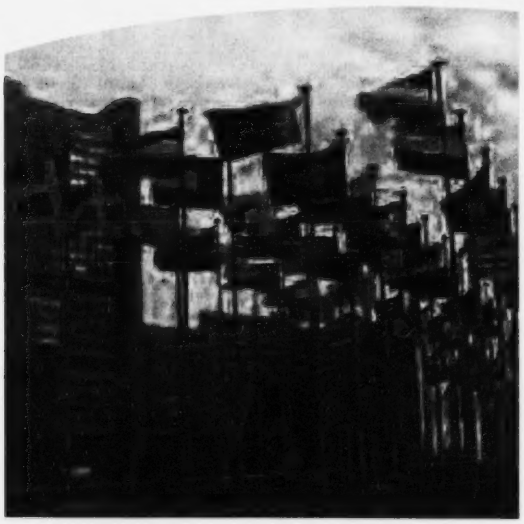
In 2007–08, CNSC maintained an influential role in IAEA activities, contributing scientific and regulatory expertise to IAEA technical meetings and key committees.

+ In 2007, as part of the Canadian delegation to the annual IAEA General Conference that brings together all Member States for decisions on all aspects of IAEA work, CNSC supported Canada's Permanent Mission to the IAEA on issues that included nuclear safety and security, safeguards, nuclear non-proliferation, and import and export controls.

+ CNSC continued providing technical advice to Canada's Permanent Representative to the IAEA during meetings of the IAEA Board of Governors. For example, CNSC staff participated in the work of the Committee on Safeguards and Verification, established by the IAEA Board of Governors to consider ways of strengthening the IAEA's safeguards system.

+ CNSC provides Canada's representative to the IAEA Director General's Standing Advisory Group on Safeguards Implementation (SAGSI). The Canadian representative is also the current chair of SAGSI, a group of experts that provides advice on the technical objectives and implementation of IAEA safeguards and on the effectiveness and efficiency of specific implementation practices. Participation in this forum enables CNSC to influence the international verification system and to provide input based upon Canada's experience, which in turn contributes to more effective and efficient IAEA safeguards in Canada. During the year, SAGSI held two plenary meetings that focused on improving safeguards implementation and evaluation through, for example, enhancing the State evaluation process and developing new safeguards approaches and procedures to address current and future challenges.

+ CNSC provides Canadian representation to the IAEA Commission on Safety Standards (CSS) and its subcommittees on standards for nuclear facilities, radiation protection, transport and waste. During 2007–08, CNSC participated in a CSS initiative to establish a modernized, long-term integrated structure for IAEA safety standards, and also assisted in reviewing the IAEA's prominent Basic Safety Standards, which address radiation protection and radioactive source safety.



+ CNSC's regulatory expertise received international recognition when the IAEA called upon CNSC staff to participate in multilateral peer review missions to Australia, Japan and Romania, to evaluate these countries' regulatory frameworks and practices. CNSC will host a similar review mission in 2009.

+ CNSC, along with representatives from other government departments and the nuclear industry, continued the drafting of Canada's Third National Report for the *Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management*, which will be presented to the IAEA in Fall 2008.

CNSC managed and funded the Canadian Safeguards Support Program

In 2007-08, CNSC delivered a comprehensive Canadian Safeguards Support Program (CSSP) which provides technical support and other resources to enhance the implementation of safeguards by CNSC and the IAEA.

+ In collaboration with the Swedish Nuclear Power Inspectorate, the CSSP worked to further develop the Digital Cerenkov Viewing Device, an apparatus to verify spent reactor fuel. The CSSP also funded the IAEA with $180,000 to upgrade two older models of the device.

+ CSSP consultants and staff provided support for training courses on topics that included CANDU reactor fundamentals, equipment, satellite imagery, and quality management. A computer-based training

module on quality management systems has been produced and implemented to provide online training for IAEA Department of Safeguards staff.

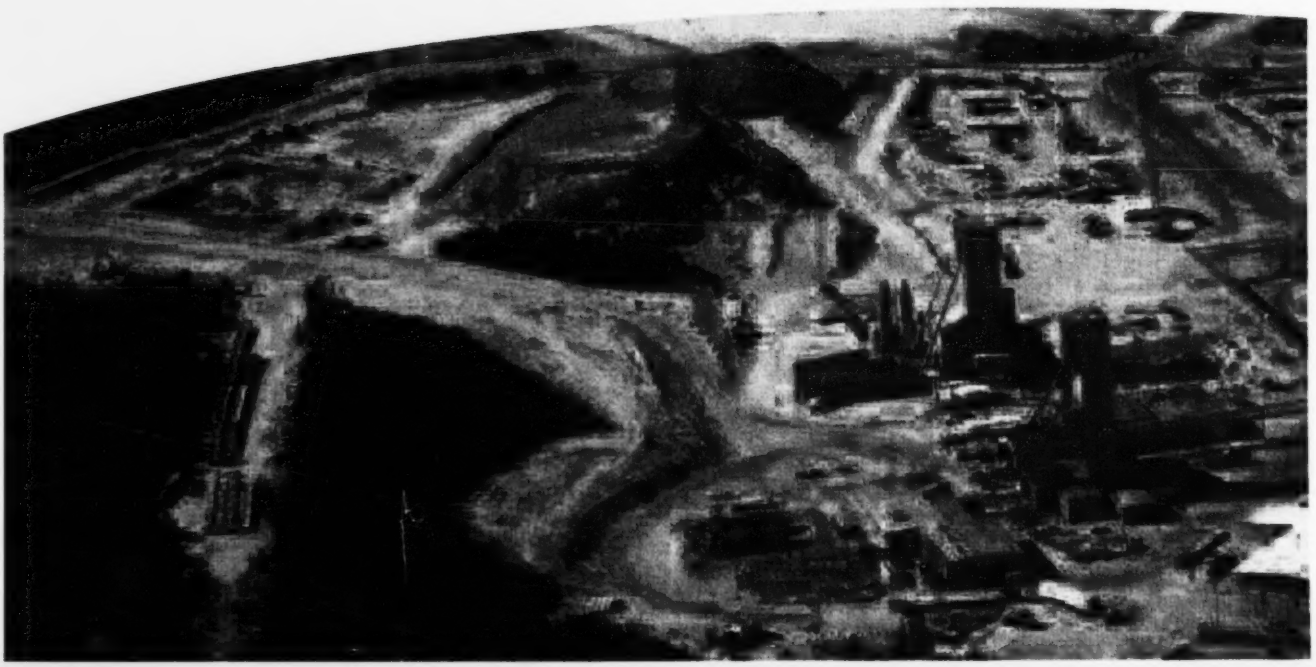
+ The CSSP has developed an integrated information portal to assist with managing vast amounts of information. In collaboration with Health Canada, the CSSP also provided the IAEA with software to simplify collection and analysis of this information.

+ In collaboration with Defence Research and Development Canada and the Canada Centre for Remote Sensing, the CSSP kept the IAEA abreast on emerging technology for safeguards verification.

+ A secure electronic mailbox, which allows timely exchange of protected information among CNSC, its licensees and the IAEA, was implemented in all Canadian multi-unit nuclear reactor facilities. These communications are essential to the conduct of IAEA inspections and are a critical part of adopting the IAEA State-level safeguards approach in Canada.

+ Autonomous Data Acquisition Modules (ADAMs), which are used to monitor the flow of nuclear material, are key components of safeguards equipment used in CANDU reactors and other facilities under IAEA safeguards. For CANDU reactors, ADAMs monitor irradiated fuel out of the reactor cores and into the spent fuel bays, where fuel cannot be verified by inspectors. A new-generation ADAM is being developed to replace current modules that are becoming obsolete, and a prototype is expected by Summer 2008. Field trials are expected by the end of the next fiscal year.

+ The CSSP produced its annual report, which will be shared with partners and posted at nuclearsafety.gc.ca during 2008–09.



1896

Antoine Henri Becquerel discovered natural radioactivity in 1896 when he placed uranium-rich minerals wrapped in black paper on a photographic plate. When developed, the plates revealed an image of the crystals, leading Becquerel to conclude that they emitted radiation that penetrated the opaque paper. This discovery influenced the work of Marie and Pierre Curie, who shared the 1903 Nobel prize in physics with Becquerel for their work.

X-ray technology was invented in 1895 by a German physicist named Wilhelm Roentgen, who made the discovery while experimenting with electron beams in a gas discharge tube.

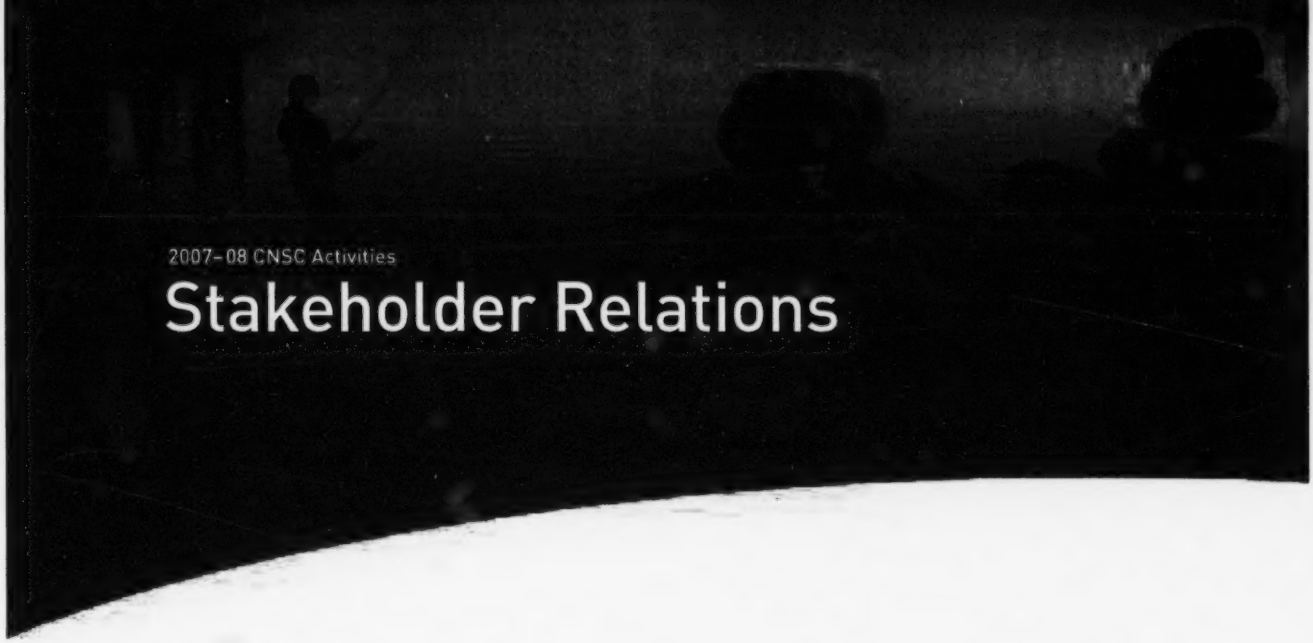
Radioisotopes are used in many medical areas such as sterilizing medical equipment, examining patients, and treating cancer and other ailments.

Many old timepieces have dials painted with radium to make them glow in the dark. Tritium is now commonly used to obtain the same effect. Tritium is also radioactive, but emits low-energy radiation that cannot penetrate the lens of the timepiece.

50s

During the 1950s, Canada was instrumental in forming the International Atomic Energy Agency (IAEA) under the auspices of the United Nations. Canada has been a member of the IAEA's Board of Governors since 1957.

Since 1945, Canada has cooperated internationally to help eliminate the use of nuclear materials for weapons, and to promote its peaceful uses.



Stakeholder Relations

Canadian confidence in CNSC rests on public understanding of its role and responsibilities. CNSC consults regularly with stakeholders and community members, sharing information about its activities and gathering public input in order to develop and maintain trust in its ability to regulate effectively.

2007–08 Stakeholder Relations Activities

CNSC visited, communicated and consulted with communities throughout Canada

+ CNSC is working to reach communities that are directly affected by licensing decisions for nuclear facilities, and seeks their opinions as part of the public hearing process. The Commission Tribunal demonstrated its commitment to community engagement when it visited Oshawa in January 2008, to hold a public hearing regarding the renewal of the Darlington Nuclear Generating Station's power reactor operating licence. While in Oshawa, the Commission also held a public hearing to consider the EA screening report for Zircatec Precision Industries Inc.'s proposed project to produce slightly enriched uranium fuel bundles, among other agenda items.

+ CNSC also conducted outreach and/or information activities in communities with interest in uranium mining activities. CNSC staff participated in numerous community forums (town hall meetings) in northern Saskatchewan, Nunavut, Labrador and Ontario. Overall, CNSC personnel participated in over a dozen such forums and continue to partake in events that focus on educating interested parties on the Canadian nuclear regulatory regime.

+ Each year, CNSC publishes a *Staff Report on the Safety Performance of the Canadian Nuclear Power Industry* (Industry Report), a comprehensive report card about the performance of Canada's five nuclear power plant sites: Bruce, Darlington, Pickering, Bécancour, and Point Lepreau.

  In 2007, CNSC held public information sessions about the Industry Report as a means of sharing and discussing it with Canadians. The sessions, held in every Canadian community that hosts nuclear power plants, were well received. They offered an ideal opportunity to engage the public by providing information about nuclear safety while responding to the general concerns of host communities. CNSC plans to hold similar sessions in upcoming years, and anticipates increased attendance as it continues promoting community engagement and as the public becomes more aware of its role and mandate. CNSC will also explore expanding these annual sessions to address a wider spectrum of topics related to nuclear safety and licensing.

+ In September 2007, CNSC received approval from the Commission Tribunal to hold public consultations about two key regulatory documents regarding new nuclear power plants (RD-337, *Design of New Nuclear Power Plants*, and RD-346, *Site Evaluation of New Nuclear Power Plants*). CNSC invited

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X-ray technology was invented in 1895 by a German physicist named Wilhelm Roentgen, who made the discovery while experimenting with electron beams in a gas discharge tube.

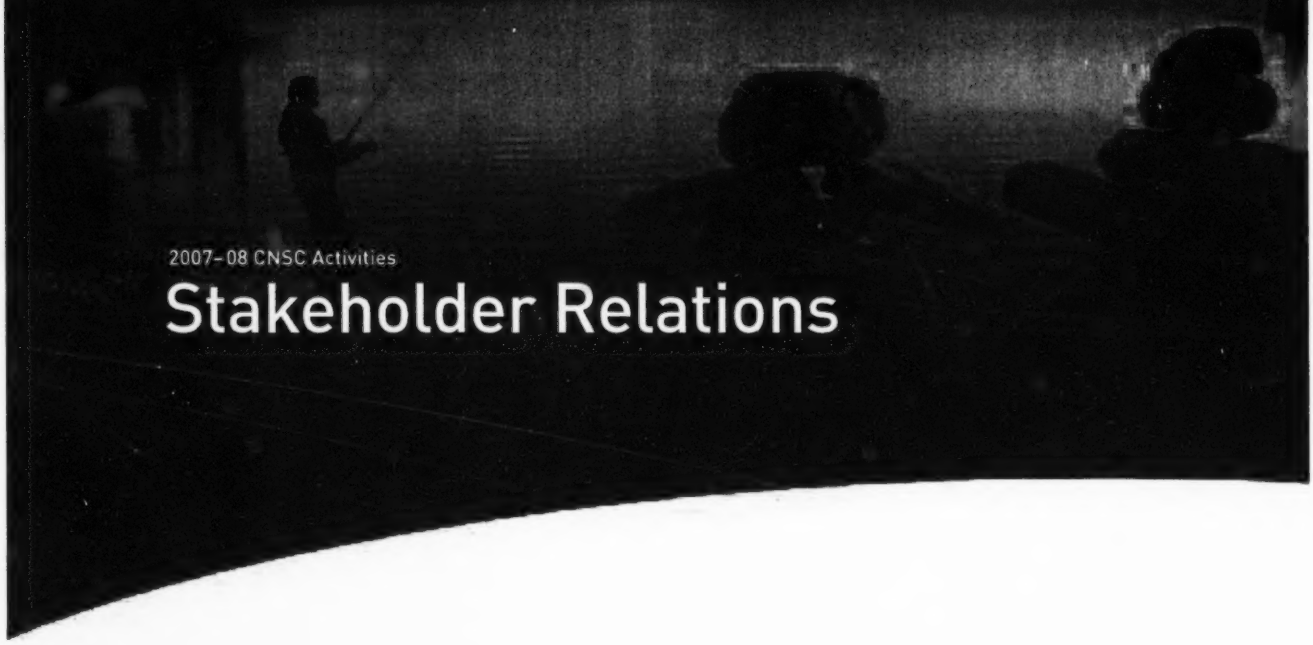
Radioisotopes are used in many medical areas such as sterilizing medical equipment, examining patients, and treating cancer and other ailments.

Many old timepieces have dials painted with radium to make them glow in the dark. Tritium is now commonly used to obtain the same effect. Tritium is also radioactive, but emits low-energy radiation that cannot penetrate the lens of the timepiece.

50s

During the 1950s, Canada was instrumental in forming the International Atomic Energy Agency (IAEA) under the auspices of the United Nations. Canada has been a member of the IAEA's Board of Governors since 1957.

Since 1945, Canada has cooperated internationally to help eliminate the use of nuclear materials for weapons, and to promote its peaceful uses.



Stakeholder Relations

Canadian confidence in CNSC rests on public understanding of its role and responsibilities. CNSC consults regularly with stakeholders and community members, sharing information about its activities and gathering public input in order to develop and maintain trust in its ability to regulate effectively.

2007–08 Stakeholder Relations Activities

CNSC visited, communicated and consulted with communities throughout Canada

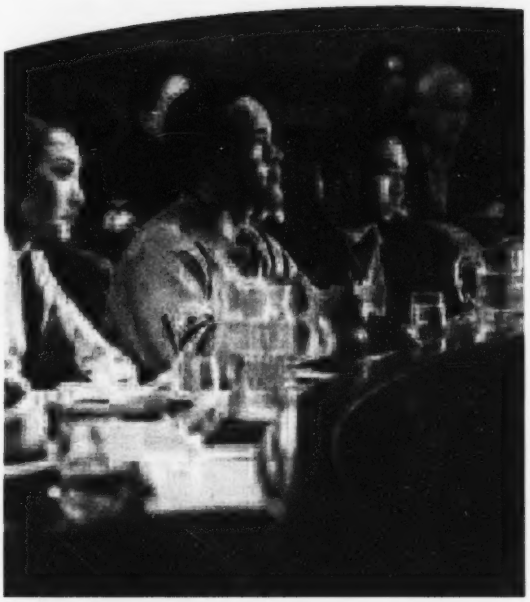
+ CNSC is working to reach communities that are directly affected by licensing decisions for nuclear facilities, and seeks their opinions as part of the public hearing process. The Commission Tribunal demonstrated its commitment to community engagement when it visited Oshawa in January 2008, to hold a public hearing regarding the renewal of the Darlington Nuclear Generating Station's power reactor operating licence. While in Oshawa, the Commission also held a public hearing to consider the EA screening report for Zircatec Precision Industries Inc.'s proposed project to produce slightly enriched uranium fuel bundles, among other agenda items.

+ CNSC also conducted outreach and/or information activities in communities with interest in uranium mining activities. CNSC staff participated in numerous community forums (town hall meetings) in northern Saskatchewan, Nunavut, Labrador and Ontario. Overall, CNSC personnel participated in over a dozen such forums and continue to partake in events that focus on educating interested parties on the Canadian nuclear regulatory regime.

+ Each year, CNSC publishes a *Staff Report on the Safety Performance of the Canadian Nuclear Power Industry* (Industry Report), a comprehensive report card about the performance of Canada's five nuclear power plant sites: Bruce, Darlington, Pickering, Bécancour, and Point Lepreau.

  In 2007, CNSC held public information sessions about the Industry Report as a means of sharing and discussing it with Canadians. The sessions, held in every Canadian community that hosts nuclear power plants, were well received. They offered an ideal opportunity to engage the public by providing information about nuclear safety while responding to the general concerns of host communities. CNSC plans to hold similar sessions in upcoming years, and anticipates increased attendance as it continues promoting community engagement and as the public becomes more aware of its role and mandate. CNSC will also explore expanding these annual sessions to address a wider spectrum of topics related to nuclear safety and licensing.

+ In September 2007, CNSC received approval from the Commission Tribunal to hold public consultations about two key regulatory documents regarding new nuclear power plants (RD-337, *Design of New Nuclear Power Plants*, and RD-346, *Site Evaluation of New Nuclear Power Plants*). CNSC invited



stakeholders to give their input on the documents through a two-phase consultation process that was held from October 2007 to January 2008, and from February 2008 to March 2008. The first phase of consultations also included a public information session, held in Toronto in November 2007, to present an overview of the regulatory documents and to explain their safety philosophy, fundamentals and principles. A question period was also included.

After reviewing all comments received via formal online submissions, CNSC posted them on its public Web site in early 2008, to allow stakeholders to review others' comments and respond to them. CNSC modified RD-337 and RD-346 to reflect input where appropriate, is preparing final versions of the two regulatory documents and will present them for final Commission Tribunal approval in early 2008–09.

CNSC engaged licensees

+ CNSC is committed to helping licensees understand and comply with its regulatory regime. Throughout 2007–08, CNSC convened three regional meetings with approximately 130 industrial radiography licensees to clarify regulatory requirements, respond to their concerns and present new regulatory initiatives. CNSC personnel also conducted outreach with licensees in Toronto, Ottawa, and Montreal, continuing a program of cross-country information presentations that were initiated in early 2007. Presentations by CNSC were also made to the Canadian Council of Independent Laboratories Association, the Canadian Radiation Protection Association and the Canadian Association of Medical Radiation Technologists. In addition, CNSC held meetings with the Canadian Organization of Medical Physicists and conducted outreach activities with WesCan, a CNSC licensee, to discuss proposed amendments to the *Class II Nuclear Facilities Regulations*.

CNSC took steps to strengthen Aboriginal consultation

+ Canada has statutory, contractual and common-law obligations to consult with Aboriginal groups. Furthermore, *The Constitution Act* (1982) and subsequent judicial clarifications dictate that Aboriginal groups, including the Indian, Inuit and Métis peoples of Canada, have specific rights. CNSC has established a working group to improve Aboriginal consultations, in addition to its general public consultations.

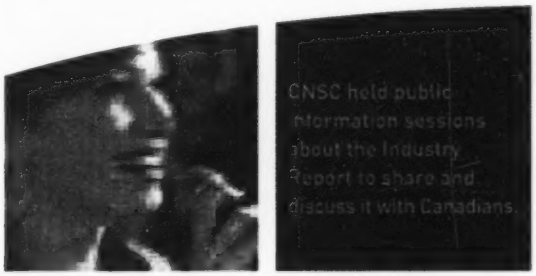
CNSC continued to improve public communications and the transparency of its process

+ As of January 2008, Commission Tribunal hearings and meetings are broadcasted live on the Internet, allowing people across the country and around the world to view the proceedings. Meetings and hearings are also archived for a three-month period.
+ CNSC is continuously improving the search functionality of and interaction through its public Web site.
+ The following publications were released:
  - *HazMat Team Emergency Response Manual for Class 7 Transport Emergencies* (INFO-0764)
  - *Canadian National Report for the Convention on Nuclear Safety: Fourth Report* (INFO-0763)
  - *Radioluminous devices – tips for your safety* (INFO-0760)

- *Annual CNSC Staff Report for 2006 on the Safety Performance of the Canadian Nuclear Industry* (INFO-0761)
- *Annual CNSC Staff Report for 2006 on the National Sealed Source Registry and the Sealed Source Tracking System* (INFO-0762)
- *CNSC Employment Equity Annual Report 2006-2007* (INFO-0765)
- *Standards and Guidelines for Tritium in Drinking Water* (INFO-0766)
- *Rev. 2 Working Safely with Nuclear Gauges* (INFO-9999-4)
- *Annual Report of CNSC and Commission Tribunal* (INFO-9999-1 2006-2007)
- *Nuclear Medicine – Use of Unsealed Nuclear Substances* (INFO-0728-4)
- *Regulatory Independence: Law, Practice and Perception – A Report to the Canadian Nuclear Safety Commission*

CNSC consulted with stakeholders from industry, government and non-governmental organizations

+ CNSC meets periodically with representatives from the Canadian Nuclear Association through the Canadian Nuclear Association Regulatory Affairs Committee, which enables industry representatives to provide input and advice to CNSC on broader issues relating to nuclear regulation in Canada. The committee also provides a forum for the industry association and CNSC to indicate priorities, directions being taken, or factors that are influencing their respective operations.
+ CNSC has a non-governmental organization (NGO) Regulatory Affairs Committee to communicate and consult with NGOs on nuclear regulatory and policy matters within its mandate. Co-chaired by a member of the NGO community, the committee is proving to be a forum for exchanging and clarifying information to promote common understanding of issues, allowing CNSC to better respond to the information needs of the NGO community. It also enables NGO members to provide input and advice to CNSC on broader issues relating to nuclear regulation in Canada.



Nuclear safety means

peace and cooperation

CNSC and its many international partners work together to promote the safe and peaceful use of nuclear materials around the world.

Highlight: International Activities

CNSC works in Canada and internationally to advance nuclear safety, security and non-proliferation and to contribute to a peaceful international nuclear sector.

In 2007, the International Atomic Energy Agency (IAEA) drew a positive comprehensive safeguards conclusion for Canada, once again granting the country its highest safeguards rating for an IAEA Member State. Using measures collectively referred to as "safeguards," the IAEA confirmed that declared nuclear material in Canada was not diverted to nuclear weapons or other nuclear explosive devices, and that it found no indication of undeclared nuclear material. This finding provided credible assurance that Canada met its international obligations for non-proliferation. CNSC was a key contributor to the IAEA's review, acting as the government authority that implements the agreement by which the IAEA carries out safeguards verification activities in Canada.

2007 was an important year for Canada's participation in the international management of nuclear activities, as CNSC continued implementing the IAEA's *Code of Conduct on the Safety and Security of Radioactive Sources*. Sealed radioactive sources are widely used throughout the world, in fields ranging from major industrial operations and medical diagnosis and treatment to teaching and demonstrations in universities and colleges. The sources are classified according to an internationally accepted risk profile that ranges from very high to very low risk.

Canada has set an international example as the first G8 country to commit to the Code's requirements. CNSC's 2007 launch of an enhanced import and export control program marked Canada's full compliance with the IAEA's *Guidance on the Import and Export of Radioactive Sources* and continued commitment to the Code. Together with the National Sealed Source Registry and associated Sealed Source Tracking System, which registers and tracks high-risk radioactive sources and devices, strengthened controls are in place to assure Canadians and the global community of secure international transfers of these sources.

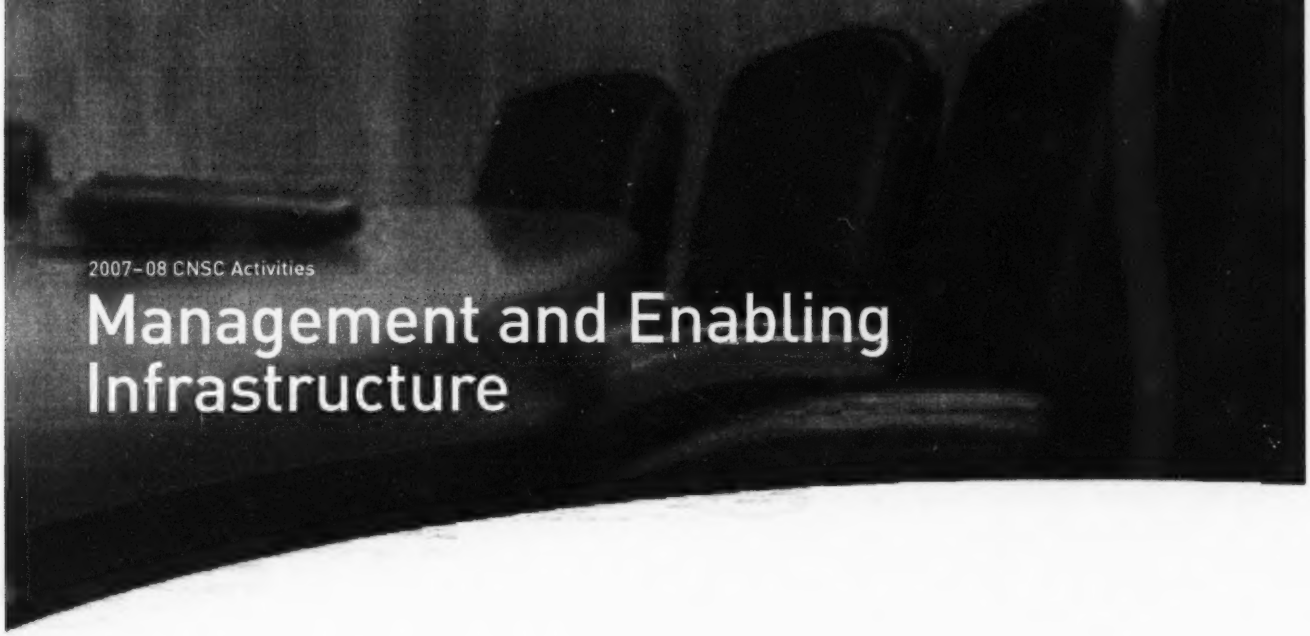
During the year, CNSC broadened its network of bilateral Memoranda of Understanding (MOUs) on regulatory cooperation. MOUs were signed with Australia, the Republic of Korea and South Africa, strengthening the sharing of best practices and international goodwill.

CNSC also contributed to the Organisation for Economic Co-operation and Development's Nuclear Energy Agency, a forum to develop consensus on technical matters and to foster best regulatory practices in areas such as nuclear installation safety, radiation protection, inspection, and evaluation of new reactor designs.

During 2007–08, CNSC maintained an influential role in IAEA activities. CNSC made important contributions to developing international standards through representation to the IAEA Commission on Safety Standards and subcommittees on standards for nuclear facilities, radiation protection, transport and waste. CNSC also worked in concert with the IAEA to host the annual CANDU Senior Regulators' Meeting, which took place in Canada in 2007. CNSC welcomed senior regulatory representatives from all countries that operate CANDU reactors to the forum. This allowed the sharing of information and experience regarding this Canadian-designed technology.

As part of its mandate, CNSC provides extensive First Responder training to law enforcement and emergency service organizations. Throughout 2007, this work assumed a growing international dimension. CNSC's collaboration with other federal departments has led to the delivery of 30 training programs in Southeast Asia and is improving the capacity of recipient countries to respond to acts of terrorism.

CNSC continues to look for opportunities to support the safe and peaceful use of nuclear materials and equipment in Canada and around the world.



Management and Enabling Infrastructure

CNSC is continuously improving management practices, internal systems and processes to ensure effective delivery of its regulatory program.

2007–08 Management and Enabling Infrastructure Activities

CNSC further developed and formalized a quality management system

In September 2005, CNSC committed to implementing a formal quality management system, which would conform to Government of Canada requirements and be modeled on the IAEA's management system standards for nuclear regulatory bodies. When fully implemented, CNSC's management system will integrate and standardize CNSC principles and processes.

+ During 2007, CNSC developed and released its Management System Manual, which identifies high-level principles and processes by which CNSC achieves its goals and objectives. The manual provides a framework for more detailed processes and procedures, and is a key document for all CNSC employees to ensure consistent, high-quality results across the organization.
+ CNSC created high-level process maps for its licensing and compliance activities. These documents will serve as a blueprint for licensing and compliance procedures, leading to consistent, well-founded regulatory decisions and licensing recommendations.
+ CNSC streamlined licensing processes and advanced an improved EA process.
+ Detailed technical assessment processes and review guides were initiated to support applications for new power reactors and reviews related to EA work performed by CNSC personnel.
+ Scoping and planning activities were completed to support integrated planning and performance management processes.
+ An integrated electronic document and records management system was introduced in 2007–08. CNSC is now receiving some regulatory information electronically and testing an online licensee filing tool. Next steps include the full implementation of an e-filing tool, along with development of associated procedures, templates, and communications materials.
+ CNSC is developing information systems and processes to increase compliance with federal security standards for communications networks, electronic document handling technologies and appropriate administrative procedures.

CNSC is growing and requires sufficient resources to continue delivering its mandate.
CNSC improved emergency preparedness and its ability to deliver critical services during emergencies.

CNSC invested in employee development

+ CNSC created an orientation program for both employees and managers. The program will be implemented during the upcoming year.
+ The organization invested in leadership coaching for managers and executives. A new management training program will be developed by the end of 2008–09.
+ CNSC held two leadership forums where managers discussed leadership issues, four sessions involving formal presentation and panels, and other leadership training throughout the year.
+ Individual training through formal courses was offered to employees across the organization.
+ CNSC began developing an online resource centre to provide tools for leadership and management.

CNSC built strong, cooperative relationships with employees

+ After signing a first collective agreement in 2006, CNSC consulted regularly with the employee union to discuss labour relations. The agreement, which took effect in late 2006, covered the period from June 14, 2004 to March 31, 2008.
+ CNSC has worked to maintain a productive working relationship with the bargaining agent and with employees that are not represented. In the coming year, CNSC will undertake collective bargaining, since the current collective agreement will have expired.

CNSC sustained proactive recruitment efforts

+ CNSC is growing and requires sufficient resources to continue delivering its mandate. During 2007–08, the organization recruited new employees in a highly competitive labour market, outpacing average recruitment levels in the broader public service.

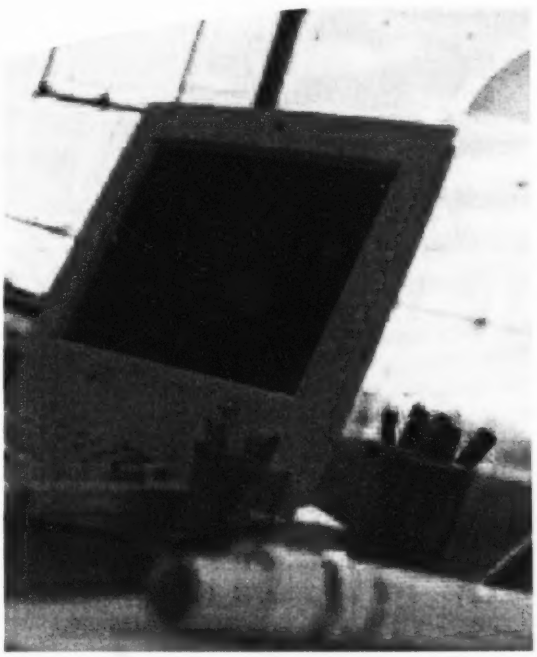
CNSC improved emergency preparedness

+ CNSC adopted a formal business continuity planning program that will enable the organization to protect its resources and deliver critical services during emergencies. As part of this, work is underway to develop a pandemic influenza plan.

CNSC met requirements of the *Federal Accountability Act*

The *Federal Accountability Act* was passed into law by Parliament on December 12, 2006. CNSC is implementing policies, controls and procedures to meet provisions of this law, which aims to improve government transparency and accountability of operations.

+ CNSC developed a prototype Contract Review Committee to ensure that contractual activities are conducted fairly and openly.
+ CNSC created an internal control and policy management organization.
+ Initiatives have been taken to bring CNSC's contracting and procurement functions in line with modern comptrollership principles.



Commission Tribunal Hearings and Meetings

CNSC's Commission Tribunal makes decisions on the licensing of major nuclear facilities through a public hearing process. A public hearing gives affected parties and members of the public an opportunity to be heard before the Commission Tribunal, which deliberates after the hearing and renders its decision on the matter at hand. Full Commission Tribunal documentation is available on CNSC's Web site at nuclearsafety.gc.ca

CNSC improved the effectiveness and efficiency of the Commission Tribunal licensing process

+ During 2007–08, the Commission Tribunal held a greater number of abridged hearings, which allow certain types of licence amendments to be addressed more efficiently. Abridged hearings, which are held to deal with decisions that are administrative in nature or when licence amendments requested are less significant, provide greater efficiency and speed of process while ensuring safety as the key consideration.

2007–08 Commission Tribunal Hearings

Class IA nuclear facilities

Bruce Power Inc.

+ Decision to amend the power reactor operating licences for the Bruce A and Bruce B Nuclear Generating Stations to reflect the removal of organizational documents and the addition of three new licence conditions
  Abridged hearing (January 15, 2008)
+ Decision to amend the power reactor operating licences for the Bruce A and Bruce B Nuclear Generating Stations
  Abridged hearing (March 11, 2008)
+ Decision to amend the Bruce A Nuclear Generating Station power reactor operating licences to reference the latest revision of the operating policies and principles
  Abridged hearing (March 20, 2008)
+ Decision to amend the power reactor operating licences for the Bruce A and Bruce B Nuclear Generating Stations
  Abridged hearing (March 28, 2008)

Hydro-Québec

+ Decision to amend the Gentilly-2 Nuclear Generating Station's operating licence with respect to the deadline for conducting testing of the leak rate from the reactor building
  Abridged hearing (June 25, 2007)

McMaster University

+ Decision to renew the operating licence for McMaster University's Class IA non-power reactor
  Public hearing (May 16, 2007)

New Brunswick Power Nuclear

+ Decision to approve proposed revisions to a Point Lepreau Generating Station reference document and to amend the Point Lepreau Generating Station's power reactor operating licence
Abridged hearing (June 25, 2007)

+ Decision to amend the Point Lepreau Generating Station's power reactor operating licence to reflect updates in documentation
Abridged hearing (October 16, 2007)

+ Decision to amend the Point Lepreau Generating Station's power reactor operating licence to authorize the conduct of written requalification testing of certified staff
Abridged hearing (December 28, 2007)

Ontario Power Generation Inc.

+ Decision to amend the Darlington Nuclear Generating Station's power reactor operating licence to reflect updates in documentation
Abridged hearing (June 25, 2007)

+ Decision to amend the Pickering A Nuclear Generating Station's power reactor operating licence to reflect updates in documentation
Abridged hearing (June 25, 2007)

+ Decision to amend the Pickering B Nuclear Generating Station's power reactor operating licence to reflect updates in documentation
Abridged hearing (June 25, 2007)

+ Decision to amend the Darlington Nuclear Generating Station's power reactor operating licence regarding recertification of personnel
Abridged hearing (October 26, 2007)

+ Decision to accept the financial guarantee and licence amendment for Ontario Power Generation Inc.'s Class I nuclear facility licences in Ontario
Public hearing (November 1, 2007)

+ Decision to renew the Darlington Nuclear Generating Station's power reactor operating licence
Public hearing (November 1, 2007, January 10, 2008 and February 20, 2008)

+ Decision to amend the Darlington Nuclear Generating Station's power reactor operating licence
Abridged hearing (February 12 and 13, 2008)

+ Decision to amend the Pickering B Nuclear Generating Station's power reactor operating licence
Abridged hearing (February 12, 2008)

+ Decision to amend the Pickering A Nuclear Generating Station's power reactor operating licence
Abridged hearing (February 13, 2008)

Saskatchewan Research Council

+ Decision to amend the SLOWPOKE-2 facility's Class IA non-power reactor operating licence to maintain a financial guarantee
Abridged hearing (August 7, 2007)

Class IB nuclear facilities

Atomic Energy of Canada Limited

+ Decision to approve the operation of shielded modular above-ground storage buildings at the Chalk River Laboratories
Abridged hearing (January 10, 2008)

+ Decision to amend the non-power reactor operating licence for the Dedicated Isotope Facilities
Abridged hearing (March 5, 2008)

+ Decision to renew the operating licence for the Dedicated Isotope Facilities at the Chalk River Laboratories
Public hearing (June 22, 2007 and September 12, 2007)

The Commission/Tribunal makes independent, fair and transparent licensing decisions.

Cameco Corporation

+ Decision to amend the Blind River Refinery's Class IB nuclear fuel facility operating licence
Abridged hearing (April 12, 2007)

+ Decision to accept the financial guarantee for the future decommissioning of the Class IB nuclear fuel facility in Blind River, Ontario
Abridged hearing (September 13, 2007)

+ Decision to accept the financial guarantee for the future decommissioning of the Class IB nuclear conversion facility in Port Hope, Ontario
Abridged hearing (September 13, 2007)

General Electric Canada Company Inc.

+ Decision to issue new licences for the Toronto and Peterborough Class IB nuclear fuel operating facilities
Abridged hearing (May 15, 2007)

Shield Source Inc.

+ Decision to accept the financial guarantee for the future decommissioning of the Class IB nuclear substance processing facility in Peterborough, Ontario
Abridged hearing (April 12, 2007)

SRB Technologies (Canada) Inc.

+ Decision to amend SRB Technologies (Canada) Inc.'s nuclear substance processing facility possession licence for its Class IB nuclear substance processing facility in Pembroke, Ontario
Public hearing (April 12, 2007)

+ Decision to approve a financial guarantee for the safe state of closure for SRB Technologies (Canada) Inc.'s Class IB nuclear substance processing facility in Pembroke, Ontario
Abridged hearing (September 12, 2007)

Rio Algom Limited

+ Decision to approve the application to amend the Class IB waste facility operating licence for the replacement of the Stanleigh effluent treatment plant
Public hearing (May 16, 2007)

TRIUMF Accelerators Inc.

+ Decision to accept the financial guarantee for the future decommissioning of the TRIUMF particle accelerator facility located in Vancouver, British Columbia
Public hearing (December 5, 2007)

Zircatec Precision Industries Inc.

+ Decision to approve guidelines for an EA of Zircatec Precision Industries Inc.'s proposal to produce slightly enriched uranium fuel bundles at its Class IB nuclear fuel facility in Port Hope, Ontario
Public hearing (June 22, 2007)

+ Decision to approve the financial guarantee for the future decommissioning of Zircatec Precision Industries Inc.'s Class IB nuclear fuel facility in Port Hope, Ontario
Abridged hearing (September 13, 2007)

+ Decision on the EA screening for Zircatec Precision Industries Inc.'s proposed production of slightly enriched uranium CANDU fuel bundles at its Class IB nuclear fuel facility in Port Hope, Ontario
Public hearing (January 9, 2008)

Uranium mines and mills

AREVA Resources Canada Inc.

+ Decision on the EA track report regarding AREVA Resources Canada Inc.'s proposed project that includes mining uranium ore deposit at its Midwest location in northern Saskatchewan
Public hearing (April 12, 2007)

+ Approval of guidelines (scope of project and assessment) for an EA of a proposed open-pit mine for the Caribou uranium deposit at the McClean Lake Operation site in northern Saskatchewan
Abridged hearing (October 31, 2007)

Cameco Corporation

+ Decision to amend the Cigar Lake Project uranium mine construction licence
  Public hearing (November 1, 2007)
+ Decision to amend the value of the financial guarantee for the Cigar Lake Project
  Abridged hearing (March 28, 2008)

Waste management facilities

Atomic Energy of Canada Limited

+ Decision to approve the construction of shielded modular above-ground storage buildings at the Chalk River Laboratories
  Abridged hearing (May 1, 2007)
+ Approval of EA guidelines (scope of project and assessment) for the proposed construction and operation of a bulk materials landfill at the Chalk River Laboratories
  Abridged hearing (October 31, 2007)

Ontario Power Generation Inc.

+ Decision to renew the Western Waste Management Facility's operating licence
  Public hearing (January 24, 2007 and April 11, 2007)
+ Decision to issue an operating licence for the Darlington Waste Management Facility
  Public hearing (June 22, 2007 and September 12, 2007)
+ Decision to renew the Pickering Waste Management Facility's operating licence
  Public hearing (December 5, 2007 and February 20, 2008)

2007–08 Commission Tribunal Meetings

The Commission Tribunal holds public meetings to make legislative, policy or administrative decisions and to be briefed on topics related to the nuclear regulatory process. At these meetings, members are also sometimes asked to make decisions on certain matters.

At Commission Tribunal meetings, CNSC personnel may also present performance reports and updates about important nuclear projects. These presentations are followed by Commission member discussions on significant development reports, facility or sector developments, or status reports.

During 2007–08, the Commission Tribunal held 7 meetings. A list of all items discussed during is available at nuclearsafety.gc.ca

Performance Standards

Activity	Performance Standard	Target	Performance 2005–06	Performance 2006–07	Performance 2007–08
Compliance[1]					
Verification: Upon completion of the verification activity, CNSC will:					
Issue Type I Inspection Report[2]	Within 60 business days	80%	50%	58%	69%
Issue Type II Inspection Report[3]	Within 40 business days	80%	86%	90%	85%
Issue Desktop Review Report	Within 60 business days	90%	70%	79%	95%
Enforcement: upon an Order being made, CNSC will:					
Confirm, amend, revoke or replace the Order (see regulatory guide G-273, *Making, Reviewing and Receiving Orders Under the Nuclear Safety and Control Act*)	Within 10 business days	100%	100%	100%	100%
Licensing[1]: For requests pertaining to an existing licence, CNSC will:					
Screen the request for completeness and issue notification that the licensing request is/is not complete[4,5]	Within 20 business days	90%	100%	97%	56%
Issue a licensing decision when a public hearing is not required, assuming an EA under the CEAA is not required	Within 80 business days	80%	97%	98%	83%
Issue a licensing decision when a public hearing is required, assuming an EA under the CEAA is not required (see INFO-0715, *Canadian Nuclear Safety Commission Public Hearings on Licensing Matters*)[5]	Within 160 business days	90%	100%	83%	100%

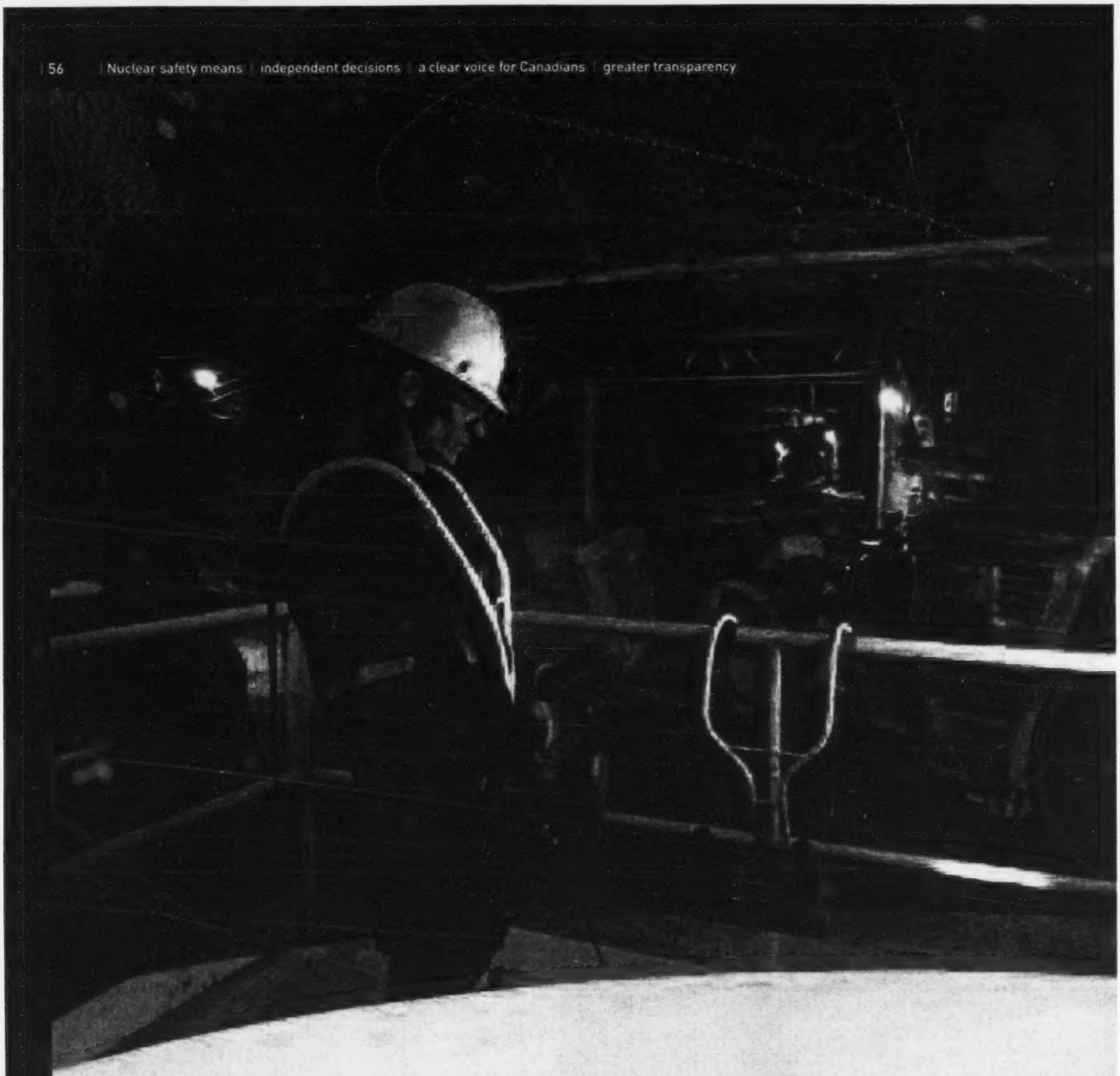
1 Compliance and licensing results are based upon available performance data.
2 Using CNSC's risk-informed approach to regulation, initial priority was given to the completion of reports whose results were of greater significance.
3 In power reactors, unless major issues arise, findings from field inspections and control room inspections will be reported on a quarterly basis, within 40 business days of end of quarter.
4 Initial priority was given to screening of requests from licensees that are of higher risk.
5 The screening and hearing processes do not apply to licensing and certification activities that are related to nuclear substances, radiation devices, Class II facilities, prescribed equipment, transport and packaging.

Activity	Performance Standard	Target	Performance 2005–06	Performance 2006–07	Performance 2007–08
Access to Information					
Respond to requests under the *Access to Information Act* and *Privacy Act*[6]	Within legislated time periods as stated in the acts	100%	94%	Access to information: 82% Privacy: 100%	Access to information: 61% Privacy: 100%
External Communications					
Place public hearings advertisements	Within deadlines stipulated in the regulations	100%	95%	100%	100%
Response time to public inquiries	Same-day acknowledgement, with response time for completion of request depending upon complexity:	100%	100%	100%	100%
	Low – same day	100%	100%	100%	100%
	Medium – within 5 business days	100%	95%	95%	95%
	High – within 10 business days	100%	80%	75%	80%

[6] CNSC received 120 requests for access to information during 2007–08, an approximately 67% increase from the 72 requests in 2006–07. Of the 2007–08 requests, more than half were received in the fourth quarter of the fiscal year and many were of significant length and complexity. CNSC has added two full-time employees to its Access to Information and Privacy Program and implemented additional measures to ensure full future compliance with legislated timelines in the *Access to Information Act* and the *Privacy Act*.

Commission Tribunal Decisions

Number of decisions in 2007–08	43
Average days to release decision	16
Decisions released within 30 days	41
Decisions released after 30 days	2



Nuclear safety means

oversight of licensees

CNSC ensures that nuclear materials, facilities and activities are safe for Canadians and the environment. It does this by continuously enhancing regulatory oversight by amending regulations, imposing licence conditions, and verifying licensee compliance with legal requirements and CNSC expectations.

Highlight: **Licensing and Compliance**

Over the past year, CNSC invested significant effort in simplifying and improving its licensing and compliance processes while collaborating with other federal departments and agencies.

Throughout 2007–08, CNSC advanced several organization-wide initiatives to increase the efficiency of internal processes, including those that affect licensing and compliance. For example, an initiative was launched to increase the amount of online information about CNSC's licensing and compliance processes. The 2008–09 fiscal year will see the introduction of a new CNSC Web site that, over time, will provide a range of general and licensee-specific information and business tools.

Every application to prepare a site for and/or construct a Class I nuclear facility or a uranium mine or mill triggers an Environmental Assessment (EA) under the *Canadian Environmental Assessment Act*. EAs are an important facet of the licensing process, and many are likely to be conducted in the coming years as part of applications to construct new nuclear power plants and uranium mines. During the year, joint review panel agreements were drafted with the Canadian Environmental Assessment Agency for Bruce Power Inc.'s proposed project to build new reactors in Ontario, and Ontario Power Generation Inc.'s Deep Geologic Repository. In support of these two projects, discussions were held with the Saugeen Ojibway First Nations, and led to the development of a consultation plan with them.

In Fall 2007, the Government of Canada created the Major Projects Management Office (MPMO) to serve as a single entry point into the federal regulatory process for licensees and stakeholders by coordinating all federal regulators involved in major resources projects. CNSC is participating in the MPMO initiative for major nuclear projects. The MPMO will track and monitor these projects as they proceed through the regulatory process.

Among other improvements to its compliance verification processes in 2007, CNSC implemented performance measures for its National Sealed Source Registry and associated Sealed Source Tracking System, which track high-risk radioactive sealed sources from their manufacture to final disposition. By the end of December 2007, the registry had information on 13,556 radioactive sealed sources in Canada, an increase of 6,406 sources over the previous year.

CNSC has also been working with other government departments to ensure the safety and security of radioactive materials. For example, in December 2007, CNSC and Transport Canada updated a Memorandum of Understanding (MOU) first signed in 1981. Nuclear substances are classified as Class 7 dangerous goods under the *Transportation of Dangerous Goods Regulations*. The new MOU clarifies responsibilities for the transport of radioactive materials in Canada and promotes enhanced collaboration and communication between the two parties.

All these efforts demonstrate CNSC's commitment to timeliness, transparency, and a safe and secure nuclear sector.

Funding of Operations

CNSC's operations are currently funded through an annual appropriation from Parliament. Its requirements are largely driven by the level of demand for licensing and regulatory oversight and by Canada's international commitments. When its workload increases, CNSC applies to the Treasury Board Secretariat to increase its cost-recoverable expenditures and related fee revenues or to receive new program funding.

The Government of Canada recovers most costs associated with CNSC's regulatory activities from licensees, in accordance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* (2003). CNSC collects fees and deposits them to the Consolidated Revenue Fund. Some licensees, such as hospitals and universities, are exempt from paying fees. In addition, fees are not charged for activities that result from CNSC obligations that do not provide a direct benefit to identifiable licensees. These include activities with respect to Canada's international obligations (including the non-proliferation of nuclear weapons), public responsibilities such as emergency management and public information programs, and updating of the NSCA and associated regulations as appropriate.

Recently, due to growth in the nuclear sector, CNSC has experienced rapidly increasing demand for its licensing, licensee certification and pre-project power plant design review activities, and consequently explored alternate funding mechanisms to meet future resource requirements. In 2007–08, CNSC received approval from Treasury Board for revenue spending authority commencing in 2008–09. This authority is being phased in over a two-year period, with full implementation of revenue spending authority for all cost-recoverable activities effective for 2009–10. The authority will enable CNSC to address growth within the nuclear sector.

Additional Funding Resources Received for 2007–08

For 2007–08, CNSC's actual expenditures were $99.8 million. Fees received were approximately $72.6 million. As a result of growing activity in all areas of the nuclear sector over the past several years, CNSC has experienced a substantial increase in its workload in most areas of its responsibility. In its 2006 budget, the Government of Canada recognized CNSC's need to expand and allocated it additional funds of more than $93 million, the majority of which is recoverable from licensees, to improve regulatory oversight over a five-year period, of this funding, $23.9 million was allocated to the plan for 2007–08. These additional resources enabled CNSC to fund the growth of its regulatory program, including overseeing nuclear power reactor refurbishment projects, expansion of uranium mining, research facilities, waste management, the use of nuclear substances, (including healthcare facilities), and addressing risks to security of nuclear facilities, while implementing a range of improvement initiatives. In the 2007–08 Supplementary Estimates "B", CNSC requested $0.96 million from Treasury Board to carry out a specific Commission Tribunal Order. These resources were required for the seizure and disposition of nuclear substances and prescribed equipment held by a licensee.

In addition, after the receipt of two applications for site licensing for construction of new power reactors in Canada, CNSC requested and received approval for incremental funding in 2006–07 that included funding of $5.6 million for 2007–08 to process these applications. These funds are also required to modernize CNSC's regulatory framework for the construction of new power plants in Canada. CNSC will continue to prepare to meet new demands with respect to new nuclear power plants and its responsibilities for domestic safeguards and non-proliferation as it shifts to a revenue-spending regime.

Canadian Nuclear Safety Commission

Financial Statements

Canadian Nuclear Safety Commission

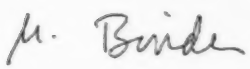
Management Responsibility for Financial Statements

The integrity and objectivity of the accompanying financial statements of the Canadian Nuclear Safety Commission (CNSC) for the year ended March 31, 2008 and all information included in its annual report are the responsibility of CNSC management.

These financial statements have been prepared by management in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector. Some of the information in the financial statements is based on management's best estimates and judgement and gives due consideration to materiality. To fulfil its accounting and reporting responsibilities, management maintains a set of accounts that provides a centralized record of CNSC's financial transactions. Financial information submitted to the *Public Accounts of Canada* and included in this annual report and *CNSC's Departmental Performance Report* is consistent with these financial statements.

Management maintains a system of financial management and internal controls designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are in accordance with the *Financial Administration Act* and regulations as well as CNSC policies and statutory requirements such as the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. Management also seeks to ensure the objectivity and integrity of data in its financial statements by careful selection, training and development of qualified staff, by organizational arrangements that provide appropriate divisions of responsibility, and by communication programs aimed at ensuring that regulations, policies, standards and managerial authorities are understood throughout CNSC.

CNSC's external auditor, the Auditor General of Canada, has audited the financial statements and at the specific request of CNSC, compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. The Auditor General has reported on her audit and compliance findings to CNSC and to the Minister of Natural Resources.



Michael Binder
President

Claude Caron
Vice-President and Chief Financial Officer

Ottawa, Canada
May 30, 2008

Auditor's Report

To the Canadian Nuclear Safety Commission
and the Minister of Natural Resources

I have audited the statement of financial position of the Canadian Nuclear Safety Commission as at March 31, 2008 and the statements of operations, equity of Canada and cash flows for the year then ended and the Commission's compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* pursuant to the *Nuclear Safety and Control Act*. These financial statements and compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* are the responsibility of the Commission's management. My responsibility is to express an opinion, based on my audit, on these financial statements and compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* pursuant to the *Nuclear Safety and Control Act*.

I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement and whether the Commission has complied with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements and evidence supporting compliance. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation and compliance with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*.

In my opinion, these financial statements present fairly, in all material respects, the financial position of the Commission as at March 31, 2008 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles. Further, in my opinion, the Canadian Nuclear Safety Commission has complied, in all significant respects, with the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations* pursuant to the *Nuclear Safety and Control Act*.

Nancy Y. Cheng, FCA
Assistant Auditor General
for the Auditor General of Canada

Ottawa, Canada
May 30, 2008

Canadian Nuclear Safety Commission

Statement of Financial Position as at March 31

	2008	2007
Assets		
Financial assets:		
Due from the Consolidated Revenue Fund	$ 17,461,994	$ 8,406,396
Accounts receivable (note 4)	9,764,934	8,324,188
	27,226,928	16,730,584
Non-financial assets:		
Prepaid expenses	196,263	582,032
Tangible capital assets (note 5)	3,041461	3,428,462
Total assets	**$30,464,652**	**$20,741,078**
Liabilities and equity of Canada		
Accounts payable and accrued liabilities	$ 8,333,969	$ 8,406,396
Payable to licensees	9,128,025	–
Vacation pay	4,644,528	3,992,297
Deferred revenue (note 6)	1,671,320	6,461,887
Employee severance benefits (note 7b)	13,534,978	11,524,621
	37,312,820	30,385,201
Equity of Canada	(6,848,168)	(9,644,123)
Total liabilities and equity of Canada	**$30,464,652**	**$20,741,078**

Contractual obligations and contingent liabilities (note 10)
The accompanying notes are an integral part of these financial statements.

Approved by

Michael Binder
President

Claude Caron
Vice-President and Chief Financial Officer

Canadian Nuclear Safety Commission

Statement of Operations for the year ended March 31

	2008	2007
Revenues		
Licence fees	$ 72,565,186	$ 58,253,077
Contract projects	–	1,695,707
Other	11,076	34,343
Total revenues (note 9)	72,576,262	59,983,127
Expenses		
Salaries and employee benefits	76,815,904	65,525,990
Professional and special services	17,094,416	13,687,346
Accommodation	5,755,992	4,696,942
Furniture, repairs and rentals	4,884,188	4,077,910
Travel and relocation	4,256,915	4,168,898
Communication and information	2,054,498	2,292,936
Grants and contributions	994,520	239,226
Utilities, materials and supplies	841,002	809,218
Other	740,533	789,147
Total expenses (note 9)	113,437,968	96,287,613
Net cost of operations	**$40,861,706**	**$36,304,486**

The accompanying notes are an integral part of these financial statements.

Canadian Nuclear Safety Commission

Statement of Equity of Canada for the year ended March 31

	2008	2007
Equity of Canada at beginning of year	$ (9,644,123)	$ (7,142,721)
Net cost of operations	(40,861,706)	(36,304,486)
Services provided without charge (note 12a)	10,117,084	8,629,299
Net cash provided by government (note 3c)	24,484,980	25,077,310
Change in due from the Consolidated Revenue Fund	9,055,598	96,475
Equity of Canada at end of year	**$ (6,848,167)**	**$ (9,644,123)**

The accompanying notes are an integral part of these financial statements.

Canadian Nuclear Safety Commission

Statement of Cash Flows for the year ended March 31

	2008	2007
Operating activities		
Net cost of operations	$ 40,861,706	$ 36,304,486
Non-cash items:		
Amortization of tangible capital assets (note 5)	(426,500)	(523,429)
Services provided without charge by government departments and agencies (note 12a)	(10,117,084)	(8,629,299)
Net (loss) or gain on disposal of surplus assets	(55,362)	25,301
Variations in statement of financial position:		
Increase in accounts receivable	1,440,746	2,743,027
(Decrease) or increase in prepaid expenses	(385,769)	237,665
Increase in liabilities	(6,927,619)	(5,868,385)
Cash used by operating activities	24,390,118	24,289,366
Capital investment activities		
Acquisitions of tangible capital assets (note 5)	102,172	813,245
Proceeds on disposal of surplus assets	(7,310)	(25,301)
Cash used by capital investment activities	94,862	787,944
Net cash provided by government (note 3c)	**$ 24,484,980**	**$ 25,077,310**

The accompanying notes are an integral part of these financial statements.

Notes to Financial Statements as at March 31, 2008

1. Authority and objectives

The Canadian Nuclear Safety Commission (CNSC) was established in 1946 by the *Atomic Energy Control Act*. Prior to May 31, 2000, when the federal *Nuclear Safety and Control Act* (NSCA) came into effect, CNSC was known as the Atomic Energy Control Board. CNSC is a departmental corporation named in Schedule II to the *Financial Administration Act* and reports to Parliament through the Minister of Natural Resources.

The *Nuclear Safety and Control Act* provides comprehensive powers to CNSC to establish and enforce national standards for nuclear energy in the areas of health, safety and environment. It establishes a basis for implementing Canadian policy and fulfilling Canada's obligations with respect to the non-proliferation of nuclear weapons. CNSC is empowered to require financial guarantees, order remedial action in hazardous situations and require responsible parties to bear the costs of decontamination and other remedial measures.

CNSC's objectives are to:

+ regulate the development, production and use of nuclear energy and the production, possession and use of nuclear substances, prescribed equipment and information in order to: a) prevent unreasonable risk to the environment, to the health and safety of persons and to national security; and b) achieve conformity with measures of control and international obligations to which Canada has agreed; and
+ disseminate scientific, technical and regulatory information concerning: a) the activities of CNSC; b) the development, production, possession, transport and use of nuclear energy and substances; and c) the effects of nuclear energy and substances use on the environment and on the health and safety of persons.

CNSC also administers the *Nuclear Liability Act*, including designating nuclear installations and prescribing basic insurance to be carried by the operators of such nuclear installations, and the administration of supplementary insurance coverage premiums for these installations.

Pursuant to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*, CNSC recovers costs related to its regulatory activities from users licensed under the NSCA. These costs include the technical assessment of licence applications, compliance inspections and the development of licence standards.

During the fiscal year, CNSC made administrative amendments to its Cost Recovery Fees Regulations. As a result of these changes, CNSC is required to refund payments received against estimated fees that are in excess of the year-end actual fee calculation. This change does not impact the calculation of deferred revenues where the licence period goes beyond the end of the fiscal year.

2. Significant accounting policies

These financial statements have been prepared in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector. The significant accounting policies are:

a) Parliamentary appropriations

CNSC is financed by the Government of Canada through parliamentary appropriations. Appropriations provided to CNSC do not parallel financial reporting according to generally accepted accounting principles since appropriations are primarily based on cash flow requirements. Consequently, items recognized in the statement of operations and the statement of financial position are not necessarily the same as those provided through appropriations from Parliament. Note 3 provides a high-level reconciliation between the two bases of reporting.

b) Net cash provided by government

CNSC operates within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by CNSC is deposited to the CRF and all cash disbursements made by CNSC are paid from the CRF. The net cash provided by government is the difference between all cash receipts and all cash disbursements including transactions with departments of the federal government.

c) Due from the Consolidated Revenue Fund

Due from the Consolidated Revenue Fund represents the amount of cash that CNSC is entitled to draw from the Consolidated Revenue Fund, without further appropriations, in order to discharge its liabilities.

d) Revenue

Revenue is recognized in the period in which the underlying transaction or event occurred that gave rise to the revenue. Licence fee revenue is recognized on a straight-line basis over the period to which the fee payment pertains (normally three months or one year). Licence fees received for future year licence periods are recorded as deferred revenue. Revenue from licence fees, special projects and other sources is deposited to the Consolidated Revenue Fund and is not available for use by CNSC.

On December 17, 2007, the Government of Canada conferred on CNSC the authority to respend licence fee revenue. The authority will be phased in over the 2008–09 and 2009–10 fiscal years. The first phase, effective April 1, 2008, includes the following:

+ new licence applications for Class I nuclear facilities of all applications received on or after October 1, 2007
+ applications for licences for new reactors effective August 17, 2006
+ new applications for uranium mines or mills, inclusive of all applications received on or after October 1, 2007, to construct or operate a mine or mill
+ all new applications, received on or after October 1, 2007, for nuclear waste activities that are not located at a Class I or Class II nuclear facility or at a mine or mill

The second phase, effective April 1, 2009, will include all other cost-recovered activities.

Certain educational institutions, not-for-profit research institutions wholly owned by educational institutions, publicly funded health care institutions, not-for-profit emergency response organizations and federal government departments are not subject to the *Canadian Nuclear Safety Commission Cost Recovery Fees Regulations*. CNSC provides licences to these organizations free of charge. The value of licences provided free of charge is calculated on the same basis as licence fees for organizations subject to the regulations.

e) Payable to licensees

Payable to licensees represents the excess of collections on estimated fees charged over the actual fees earned as calculated at year-end.

f) Vacation pay and compensatory leave

Vacation pay and compensatory leave are expensed as the benefits accrue to employees under their respective terms of employment.

g) Grants and contributions

Grants are recognized in the year in which the conditions for payment are met. Contributions are recognized in the year in which the recipient has met the eligibility criteria or fulfilled the terms of a contractual transfer agreement.

h) Services provided without charge by other government departments and agencies

Services provided without charge by other government departments and agencies are recorded as operating expenses at their estimated cost. These include services such as accommodation provided by Public Works and Government Services Canada, contributions covering employer's share of employees' insurance premiums and costs paid by Treasury Board Secretariat, salaries and associated legal costs of services provided by Justice Canada, audit services provided by the Office of the Auditor General, and workers' compensation benefits provided by Human Resources and Social Development Canada.

i) Pension benefits

All eligible employees participate in the Public Service Pension Plan, a multi-employer plan, administered by the Government of Canada. CNSC's contributions to the plan are charged to expenses in the year incurred and represent the total CNSC obligation to the plan. Current legislation does not require CNSC to make contributions for any actuarial deficiencies of the plan.

j) Employee severance benefits

Employees are entitled to severance benefits, as provided for under their respective terms of employment. The cost of these benefits is accrued as employees render the services necessary to earn them. The obligation related to the benefits earned by employees is calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the government as a whole.

k) Accounts receivable

Accounts receivable are stated at amounts expected to be ultimately realized; a provision is made for receivables where recovery is considered uncertain.

l) Contingent liabilities

Contingent liabilities are potential liabilities that may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability is accrued and an expense recorded. If the likelihood is not determinable or an amount cannot be reasonably estimated, the contingency is disclosed in the notes to the financial statements.

m) Tangible capital assets

Tangible capital assets with an acquisition cost of $10,000 or more are recorded at their acquisition cost. Amortization is calculated on a straight-line basis over the estimated useful life of the asset as follows:

Asset class	Amortization period
Buildings	20 to 30 years
Furniture and equipment	5 to 20 years
Informatics equipment and software	2 to 5 years
Motor vehicles	4 years

n) Nuclear Liability Reinsurance Account

CNSC administers the Nuclear Liability Reinsurance Account on behalf of the federal government. CNSC receives premiums paid by the operators of nuclear installations for the supplementary insurance coverage and credits these to the Nuclear Liability Reinsurance Account in the Consolidated Revenue Fund. Since CNSC does not have the risks and rewards of ownership, nor does it have accountability for this account, it does not include any of the associated financial activity or potential liability in its financial statements. Financial activity and liability is, however, reported in note 11 of these financial statements.

o) Measurement uncertainty

The preparation of these financial statements in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector, requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses reported in the financial statements. At the time of preparation of these statements, management believes the estimates and assumptions to be reasonable. The most significant items where estimates are used are contingent liabilities, the liability for employee severance benefits and the useful life of tangible capital assets. Actual results could significantly differ from those estimated. Management's estimates are reviewed periodically and, as adjustments become necessary, they are recorded in the financial statements in the year they become known.

3. Parliamentary appropriations

CNSC receives its funding through Parliamentary appropriations. Items recognized in the statement of operations and the statement of financial position in one year may be funded through parliamentary appropriations in prior, current and future years. Accordingly, CNSC has different net results of operations for the year on a government funding basis than on an accrual accounting basis. These differences are reconciled below.

a) Reconciliation of net cost of operations to current year appropriations used

	2008	2007
Net cost of operations	$ 40,861,706	$ 36,304,486
Adjustments for items affecting net cost of operations but not affecting appropriations:		
Add (Less):		
Amortization of tangible capital assets	(426,500)	(523,429)
Vacation pay and compensatory leave	(652,231)	(374,449)
Services provided without charge by other government departments and agencies	(10,117,084)	(8,629,299)
Revenue not available for spending	72,576,262	59,983,127
Employee severance benefits	(2,010,357)	(2,378,758)
Bad debts	(205,728)	–
Other expenses	102,144	(170,747)
	59,266,506	47,906,445
Adjustments for items not affecting net cost of operations but affecting appropriations:		
Add (Less):		
Acquisitions of tangible capital assets	102,172	813,245
Variation in prepaid expenses	(385,769)	237,665
	(283,597)	1,050,910
Current year appropriations used	**$99,844,615**	**$85,261,841**

b) Appropriations provided and used

	2008	2007
Parliamentary appropriations voted:		
Vote 20 – CNSC operating expenditures	$ 93,488,162	$ 84,035,099
Less:		
Lapsed appropriation	3,643,534	6,954,701
	89,844,628	77,080,398
Statutory:		
Spending of proceeds from the disposal of surplus assets	25,301	–
Contributions to employee benefit plans	9,974,686	8,181,443
Current year appropriations used	**$99,844,615**	**$85,261,841**

c) Reconciliation of net cash provided by government to current year appropriations used

	2008	2007
Net cash provided by government	$ 24,484,980	$ 25,077,310
Revenue not available for spending	72,576,262	59,983,127
Change in net position in the Consolidated Revenue Fund:		
Variation in accounts receivable	(1,440,746)	(2,743,027)
Variation in accounts payable and accrued liabilities	(72,427)	96,475
Variation in payables to licensees	9,128,025	–
Variation in deferred revenues	(4,790,567)	3,018,703
Other adjustments	(147,549)	(573,078)
Refunds of prior years' expenses	106,637	402,331
Current year appropriations used	**$99,844,615**	**$85,261,841**

4. Accounts receivable

	2008	2007
Licence fees	$ 9,663,089	$ 7,331,816
Other government departments	172,225	607,992
Suppliers	135,348	384,380
Gross receivables	9,970,662	8,324,188
Allowance for doubtful accounts	205,728	–
Net receivables	**$ 9,764,934**	**$ 8,324,188**

5. Tangible capital assets

	Cost				Accumulated Amortization				2008	2007
Capital asset class	**Opening balance**	**Acquisitions**	**Disposals Adjustments**	**Closing balance**	**Opening balance**	**Amortization**	**Disposals Adjustments**	**Closing balance**	**Net book value**	**Net book value**
Buildings	$ –	$ 23,805	$ –	$ 23,805	$ –	$ –	$ –	$ –	$ 23,805	$ –
Furniture & equipment	3,940,273	30,204	(181,281)	3,789,196	1,438,871	248,282	(125,826)	1,561,328	2,227,868	2,501,402
Informatics equipment & software	1,196,533	14,825	(104,980)	1,106,378	455,600	111,461	(97,763)	469,298	637,080	740,933
Motor vehicles	450,434	33,338	–	483,772	264,307	66,757	–	331,064	152,708	186,127
Total	**$ 5,587,240**	**$ 102,172**	**$ (286,261)**	**$ 5,403,151**	**$ 2,158,778**	**$ 426,500**	**$ (223,588)**	**$ 2,361,690**	**$ 3,041,461**	**$ 3,428,462**

Amortization for the current year amounts to $426,500 (2007– $523,429) and is included in other expenses on the statement of operations.

6. Deferred Revenue

	2008	2007
Balance at beginning of year	$ 6,461,887	$ 3,443,184
Less: revenue recognized in licence fees in the year	(6,449,922)	(3,443,184)
Add: fees received in the year for future year licence periods	1,659,355	6,461,887
Balance at end of year	**$ 1,671,320**	**$ 6,461,887**

As a result of the administrative change referred to in note 1, the deferred revenue for 2007–08 fiscal year includes only the fees collected where the licence period goes beyond the end of the fiscal year.

7. Employee future benefits

a) Pension benefits

CNSC and all eligible employees participate in the Public Service Pension Plan, which is sponsored and administered by the Government of Canada. Pension benefits accrue up to a maximum period of 35 years at a rate of 2 percent per year of pensionable service, multiplied by the average of the best 5 consecutive years of earnings. The benefits are integrated with Canada/Québec Pension Plans and they are indexed to inflation. The employer's and employees' contributions to the plan were as follows:

	2008	2007
CNSC contribution to pension plan	$ 7,271,546	$ 6,029,723
Employees' contributions	$ 3,575,784	$ 2,970,173

CNSC's responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the plan's sponsor.

b) Employee severance benefits

CNSC provides severance benefits to its employees based on eligibility, years of service and final salary. This benefit plan is not pre-funded. Benefits will be paid from future appropriations. Information about the severance benefits, measured as at March 31, is as follows:

	2008	2007
Accrued benefit obligation, beginning of year	$ 11,524,621	$ 9,145,863
Expense for the year	2,821,208	3,298,366
Benefits paid during the year	(810,851)	(919,608)
Accrued benefit obligation, end of year	**$13,534,978**	**$11,524,621**

8. Licences provided free of charge by CNSC

CNSC provides licences free of charge to educational institutions, not-for-profit research institutions wholly owned by educational institutions, publicly funded health care institutions, not-for-profit emergency response organizations, and federal departments. The total value of these licences amounted to $8,953,300 (2007 – $8,604,263).

9. Summary of expenditures and revenues by cost recovery fee category

	Revenue	Licences provided free of charge (note 8)	2008 total value of licences and other revenue	2007 total value of licences and other revenue	2008 cost of operations	2007 cost of operations
Licensing, certification and compliance						
Power reactors	$ 49,914,392	$ –	$ 49,914,392	$ 38,029,224	$ 49,914,394	$ 38,510,606
Non-power reactors	1,403,797	571,709	1,975,506	1,978,188	1,975,507	2,003,228
Nuclear research and test establishments	5,141,436	–	5,141,436	4,139,206	5,141,437	4,191,601
Particle accelerators	0	900,343	900,343	623,235	900,343	631,124
Uranium processing facilities	3,361,237	–	3,361,237	2,873,812	3,424,390	2,910,190
Nuclear substance processing facilities	652,625	–	652,625	1,030,886	844,045	1,043,935
Heavy water plants	10,145	–	10,145	74,212	10,145	75,151
Radioactive waste facilities	1,566,384	–	1,566,384	1,781,286	1,566,382	1,803,834
Uranium mines and mills	5,531,206	70,421	5,601,627	4,206,650	5,601,628	4,259,898
Waste nuclear substances	203,287	901,194	1,104,481	1,439,173	1,193,429	1,457,917
Total regulatory plan activity fees	**67,784,509**	**2,443,667**	**70,228,176**	**56,175,872**	**70,571,700**	**56,887,484**
Nuclear substances	3,957,528	4,196,047	8,153,575	8,045,583	8,697,113	9,069,086
Class II nuclear facilities	267,865	2,295,313	2,563,178	2,034,819	3,294,172	3,198,448
Dosimetry services	41,234	3,273	44,507	49,057	1,123,965	724,989
Total formula fees	**4,266,627**	**6,494,633**	**10,761,260**	**10,129,459**	**13,115,250**	**12,992,523**
Transport licences and transport package certificates	203,650	–	203,650	262,159	696,757	542,437
Radiation device and prescribed equipment certificates	119,000	15,000	134,000	124,985	410,639	493,603
Exposure device operator certificates	191,400	–	191,400	164,866	141,307	130,092
Total fixed fees	**514,050**	**15,000**	**529,050**	**552,010**	**1,248,703**	**1,166,132**
Total licensing and certification	**72,565,186**	**8,953,300**	**81,518,486**	**66,857,341**	**84,935,653**	**71,046,139**
Non-licensing and non-certification						
Co-operative undertakings	11,076	–	11,076	34,343	19,399,365	15,948,817
Stakeholder relations	–	–	–	–	8,241,758	6,100,717
Regulatory framework	–	–	–	–	825,786	910,126
Special projects, other revenue and related expenses	–	–	–	1,695,707	35,407	2,281,814
Total non-licensing and non-certification	**11,076**	**–**	**11,076**	**1,730,050**	**28,502,315**	**25,241,474**
Total	**$ 72,576,262**	**$ 8,953,300**	**$ 81,529,562**	**$ 68,587,391**	**$ 113,437,968**	**$ 96,287,613**

10. Contractual obligations and contingent liabilities

a) Contractual obligations

The nature of CNSC's activities results in some multi-year contracts and obligations whereby CNSC will be committed to make some future payments when the services and goods are received. As of March 31, 2008, CNSC has significant future years' contractual obligations for the following:

	2009	2010	2011	2012	2013 & thereafter	Total
Acquisitions of goods and services	$ 3,327,024	$ 172,096	$ 28,287	$ 8,523	$ 125	$ 3,536,055
Operating leases	79,111	67,300	65,550	19,640	1,074	232,675
Total	**$ 3,406,135**	**$ 239,396**	**$ 93,837**	**$ 28,163**	**$ 1,199**	**$3,768,730**

b) Contingent liabilities

Claims have been made against CNSC in the normal course of operations. Legal proceedings for claims totalling approximately $55,250,000 (2007 – $55,250,000) were still pending at March 31, 2008. Some of these potential liabilities may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability is accrued and an expense recorded in the financial statements.

11. Nuclear Liability Reinsurance Account

Under the *Nuclear Liability Act* (NLA), operators of designated nuclear installations are required to possess basic and/or supplementary insurance of $75 million per installation for specified liabilities. The federal government has designated the Nuclear Insurance Association of Canada (NIAC) as the sole provider of third-party liability insurance and property insurance for the nuclear industry in Canada. The NIAC provides insurance to nuclear operators under a standard policy.

The policy consists of two types of coverage: Coverage A and Coverage B. Coverage A includes only those risks that are accepted by the insurer; that is, bodily injury and property damage. Coverage B risks include personal injury that is not bodily; for example, psychological injury, damage arising from normal emissions and damage due to acts of terrorism. Effective in 2003, the federal government agreed to provide coverage for damage due to acts of terrorism, which was previously provided under Coverage A.

The NIAC receives premiums from operators for both coverages; however, premiums for Coverage B risks are remitted to the federal government, which reinsures these risks under its reinsurance agreement with the NIAC. Through the reinsurance agreement, the federal government also pays the difference (supplementary insurance) between the basic insurance amount set by CNSC and the full $75 million of liability imposed by the NLA. As of March 31, 2008, the total supplementary insurance coverage is $584,500,000 (2007 – $584,500,000).

All premiums paid by the operators of nuclear installations for the supplementary insurance coverage are credited to a Nuclear Liability Reinsurance Account in the Consolidated Revenue Fund. Premiums received in respect of coverage for damage due to acts of terrorism amount to $284,528 (2007 – $280,592). Claims against the

supplementary insurance coverage are payable out of the Consolidated Revenue Fund and charged to the Account. There have been no claims against or payments out of the account since its creation.

As explained in note 2n), CNSC administers the Nuclear Liability Reinsurance Account on behalf of the Government of Canada through a specified purpose account consolidated in the Public Accounts of Canada. During the year, the following activity occurred in this account:

	2008	2007
Opening balance	$ 1,389,745	$ 1,107,553
Receipts deposited	286,128	282,192
Closing balance	**$ 1,675,873**	**$ 1,389,745**

12. Related party transactions

CNSC is related as a result of common ownership to all Government of Canada departments, agencies, and Crown corporations. CNSC enters into transactions with these entities in the normal course of business. Some of these transactions are on normal trade terms applicable to all individuals and enterprises, while others are services provided without charge to CNSC. All material-related party transactions are disclosed below.

a) Services provided without charge

During the year, CNSC received services that were obtained without charge from other government departments and agencies. These are recorded at their estimated cost in the financial statements as follows:

	2008	2007
Accommodation provided by Public Works and Government Services Canada	$ 5,681,677	$ 4,628,001
Contributions for employer's share of employee benefits provided by the Treasury Board Secretariat	4,198,602	3,808,698
Salary and associated costs of legal services provided by Justice Canada	91,000	91,000
Audit services provided by the Office of the Auditor General of Canada	90,000	69,600
Other	55,805	32,000
Total	**$10,117,084**	**$ 8,629,299**

b) Payables and receivables outstanding at year-end with related parties

During the year, CNSC incurred expenses $22,928,967 (2007 – $21,189,735) as a result of transactions with related parties, which included services provided without charge of $10,117,084 (2007 – $8,629,299) as described above. CNSC recognized revenue of $6,837,879 (2007 – $7,257,208) as a result of transactions with related parties, which included accounts receivable in the amount of $465,582 (2007 – $955,809).

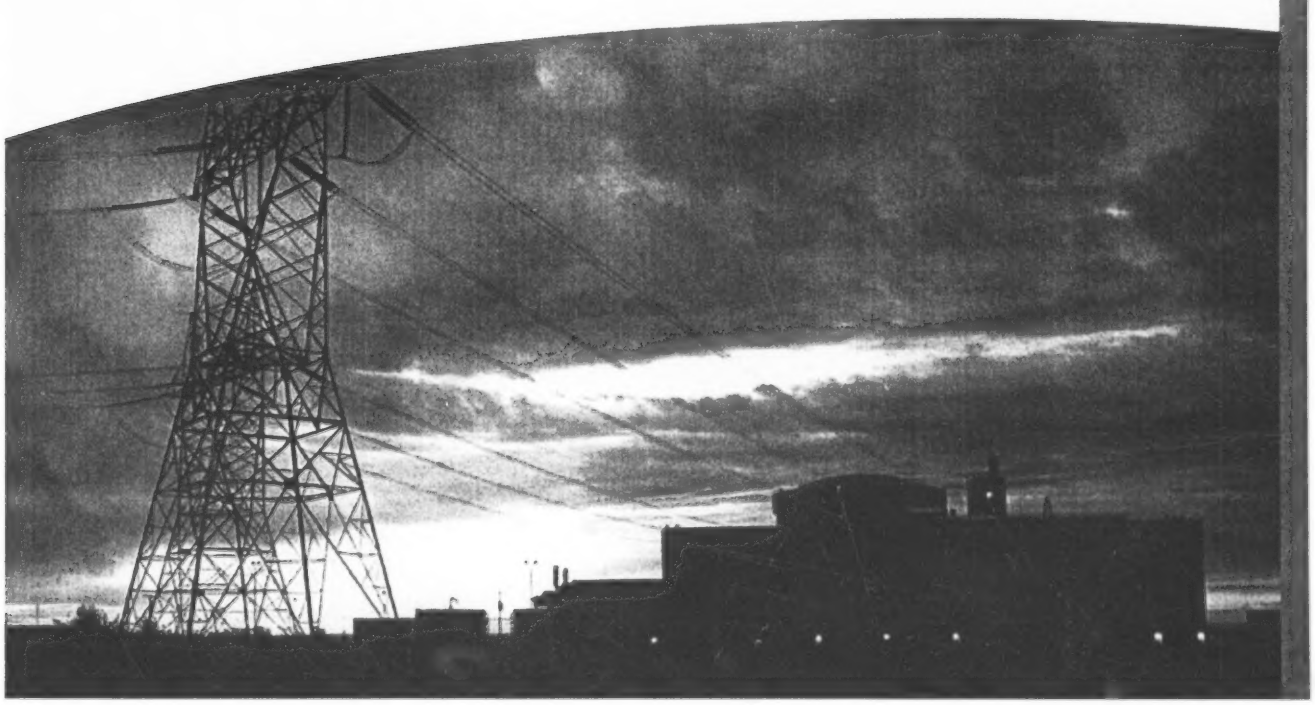
	2008	2007
Accounts receivable with other government departments and agencies	$ 637,808	$ 1,563,801
Accounts payable to other government departments and agencies	$ 454,351	$ 1,509,510

Industry Report on Nuclear Power Plant Performance

Each year, CNSC publishes the *CNSC Staff Report on the Safety Performance of the Canadian Nuclear Power Industry* (Industry Report), a comprehensive report card of the performance of Canada's five nuclear power reactor sites: Bruce, Darlington, Pickering, Bécancour, and Point Lepreau.

CNSC assesses licensee programs and their implementation separately, according to five ratings that range from "A" (exceeds requirements) to "E" (unacceptable). Grades are assigned for both design of a program and its implementation, for performance in each safety area and for programs within each safety area.

In the 2007 Industry Report, CNSC personnel concluded that overall, the nuclear power plant industry operated safely. The vast majority of safety areas and programs received "B" grades, indicating that licensees met CNSC expectations. CNSC assigned a "C" grade where licensee performance fell below CNSC requirements. Even though a "C" rating does not mean a safety risk is unacceptable, CNSC continues to closely monitor facilities that received "C" grades, to ensure that licensees or applicants are making every effort to mitigate the issues identified. No facility received a lower than a "C" grade in 2007.



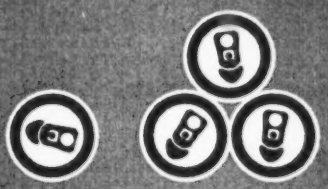
Industry Report on Nuclear Power Plant Performance as of January 2008

Safety area/ Program	P or I	Bruce A	Bruce B	Darlington	Pickering A	Pickering B	Gentilly-2	Point Lepreau
Operating performance	P	B	B	B	B	B	B	B
	I	B	B	B	C	B	B	B
Organization and plant management	P	B	B	B	B	B	B	B
	I	B	B	B	C	B	B	B
Operations	P	B	B	B	B	B	B	B
	I	B	B	B	C	B	B	B
Occupational health and safety (non-radiological)	P	B	B	B	B	B	B	B
	I	A	A	A	B	B	B	B
Performance assurance	P	B	B	B	B	B	B	B
	I	B	B	B	C	B	B	B
Quality management	P	B	B	B	B	B	B	B
	I	B	B	B	C	B	C	B
Human factors	P	B	B	B	B	B	B	B
	I	B	B	B	C	B	B	C
Training, examination and certification	P	B	B	B	B	B	B	B
	I	C	B	B	B	B	B	B
Design and analysis	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Safety analysis	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Safety issues	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Design	P	B	B	B	B	B	B	B
	I	C	B	B	C	B	B	B
Equipment fitness for service	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Maintenance	P	B	B	B	B	B	B	B
	I	C	B	B	B	B	B	B
Structural integrity	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Reliability	P	B	B	B	B	B	B	A
	I	B	B	B	B	B	B	B
Equipment qualification	P	B	B	B	B	B	B	B
	I	B	B	C	B	B	B	B
Emergency preparedness	P	A	A	A	A	A	A	A
	I	A	A	A	A	A	B	B
Environmental protection	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B
Radiation protection	P	B	B	B	B	B	B	B
	I	B	B	A	B	B	B	B
Site security	P	Protected						
	I							
Safeguards	P	B	B	B	B	B	B	B
	I	B	B	B	B	B	B	B

Legend:
P = Program
I = Implementation
A = Exceeds requirements
B = Meets requirements
C = Below requirements
D = Significantly below requirements
E = Unacceptable

Note:
The Bruce and Pickering sites receive separate grades for their respective facilities:
Bruce A and Bruce B, and Pickering A and Pickering B.

Did you know?

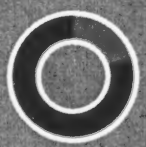


Can manufacturers use radioisotopes to obtain the proper thickness of tin and aluminum. Radioisotopes are also used to check whether containers like beer cans, soda cans or paint cans are filled to the proper levels. Other industrial applications of radioisotopes include detecting fractures in jet engines and providing emergency lighting in exit signs.

Canada has four operational uranium mines:

- **Key Lake**
  Saskatchewan
- **McArthur River**
  Saskatchewan
- **Rabbit Lake**
  Saskatchewan
- **McClean Lake**
  Saskatchewan

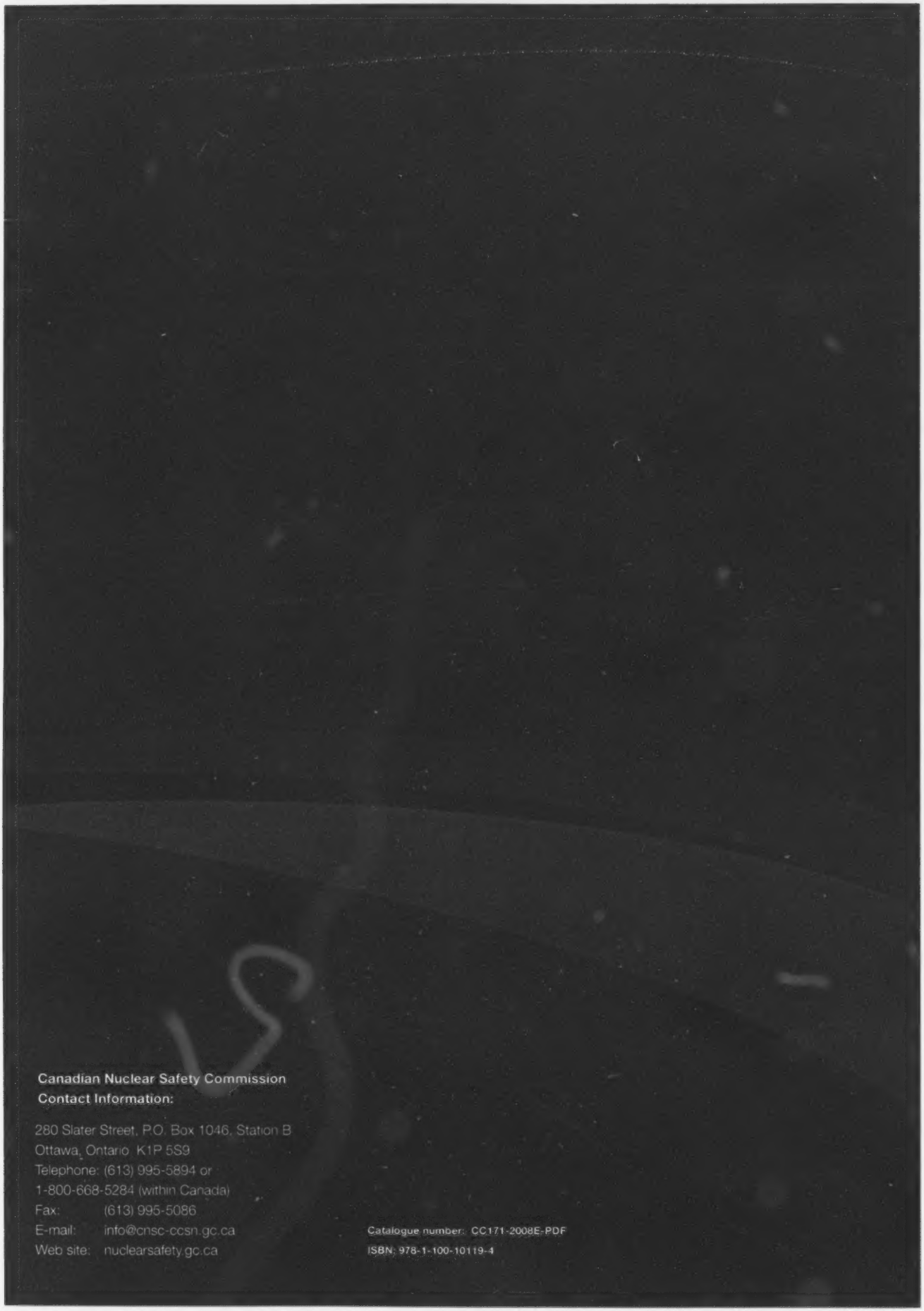
Nuclear energy is an important component of Canada's diversified energy supply. Nuclear power stations generate heat by splitting atoms of a type of uranium known as U-235. The heat is used to produce steam that turns large turbines, which in turn produce electricity.



Canada is the world's largest uranium producer: 80% of its uranium is exported, accounting for 30% of global production.

Uranium ore, a naturally occurring element, is used for fuel at nuclear power plants, but must first be processed. Canada has five licensed uranium processing and fuel fabrication facilities.

Photo credits: CNSC would like to thank the following organizations that provided photographs appearing this document: AREVA Resources Canada Inc., Bruce Power Inc., Dean Calma/IAEA, Cameco Corporation, Doncaster and Bassetlow Hospitals NHS Foundation, Hydro-Québec, New Brunswick Power Nuclear, Ontario Power Generation Inc.



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